Laboratory Scrapbook, Cat. 297

This scrapbook contains only a few dated entries, covering the period December 1871-November 1875. Most of the notes and drawings are by Edison and relate to various aspects of telegraphy, including the multiplex, automatic, chemical, and domestic telegraph. There are also drafts of Edison's caveats and patent applications, as well as descriptions of telegraph-related patents by other inventors. Some of the pages are part of the series of draft essays found in NS-74-002, Unbound Notes and Drawings. The book also contains drafts of letters and essays published in The Operator and The Telegraphic Journal. Other documents include correspondence with George Barker, George Gouraud, and others; accounts, essays, and memoranda; and an issue of Telegraphica, dated June 10, 1873. The cover is marked "R."

The book contains 310 numbered pages. It has been disbound, and most items have been removed from their scrapbook pages to allow for filming. The scrapbook page number has been filmed below each document.

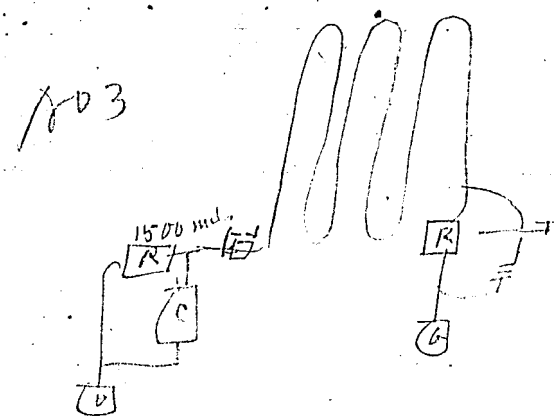
Blank pages not filmed: 39-40, 49-50, 109-110, 141-142, 155-309.

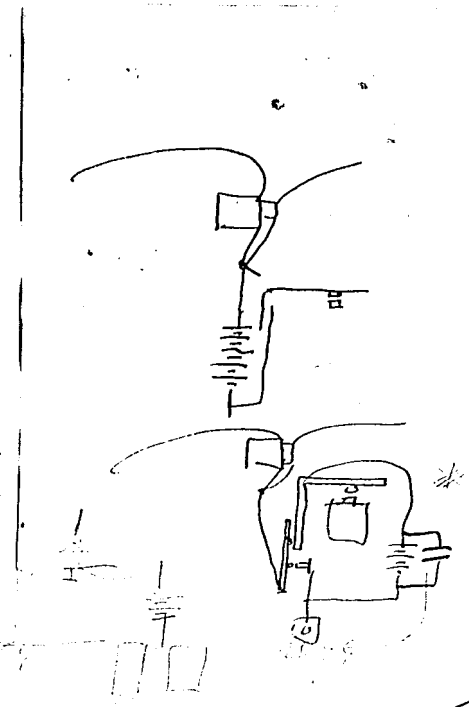
[ITEM FOUND IN BOOK]

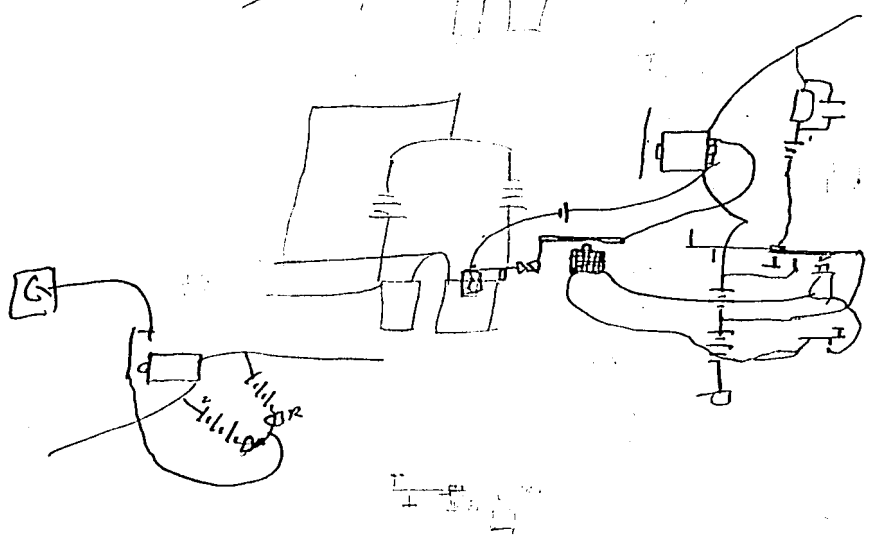
Feb 15	1 Stoves + pipings		
17	Grind Stone	1	78
15	Security for Gas	10	00
21	1 Turning chisel		30
	1 Gouge		35
	1 Chaser		55
	8½ oz steel wire	1	02
	1 Saw	2	25
	1 lb antimony		28
	3 ft rubber tubing		4[illegible]
	1 Glue pot		5[illegible]
	1 Rule		[illegible]
	1 Bar tin		[illegible]
	1 Dusting brush		[illegible]
219	8 Carpenters Bill		
19	11 face plate		
Mar 1	116½ lbs		
p 2	Chemical		
2	Paper		
Feb 21	2 w		
	1 P		

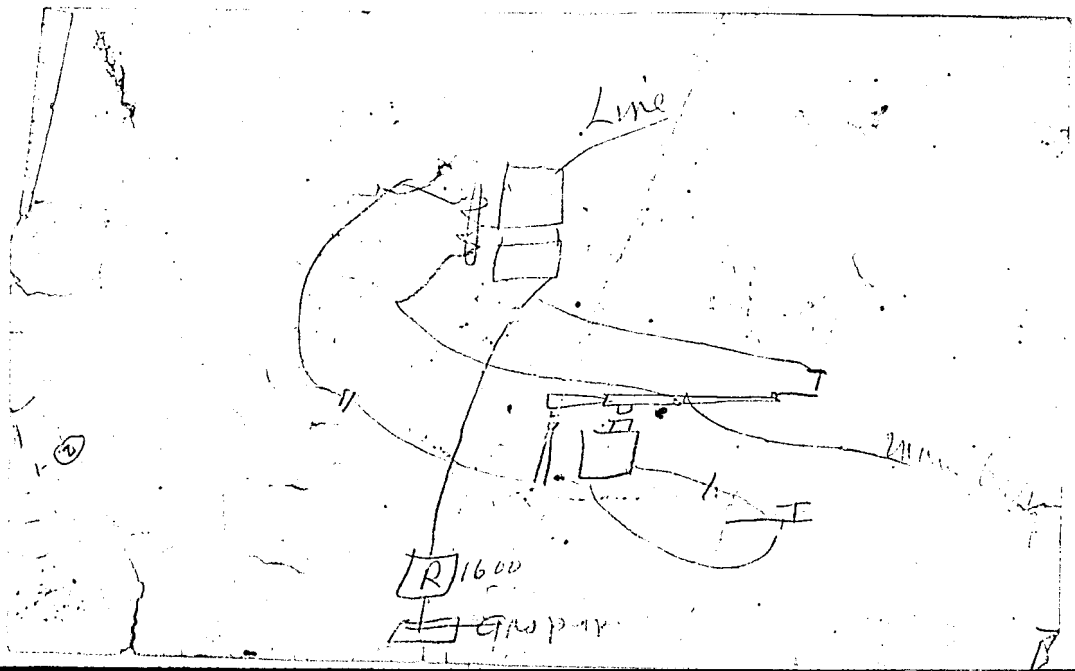
[ITEM FOUND IN BOOK]

	Lathe etc	293 00
	Frasses Bill	95 00
Feb 21	2 ½ Gallon Cans	90
	1 qt Alcohol	75
"	" Spermoil	75
"	2 lbs pumice stone	14
"	½ " Shellac	35
"	1 Match Box	25
"	12 shsets "O" Emery ppr	30
"	12 1½ cloth do	80
"	12 Sand paper	18
"	1 Lacquer brush	20
	1 ball wick	10
	Marchand	13 50
		3 10
		11 67
	strings	11 25
		45
		2 05
		37
		4 75





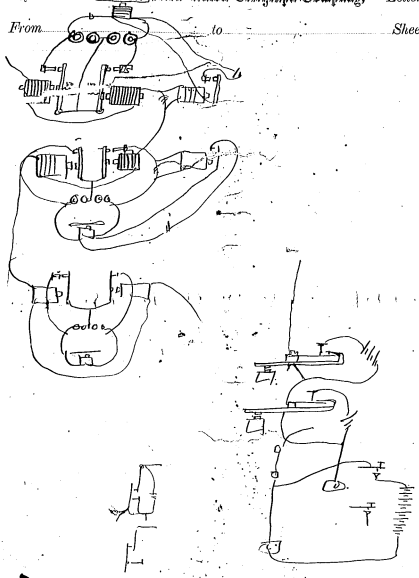




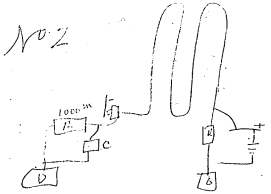
1

Message No. ..... **The Western Union Telegraph Company.** Letter .....

From ..... to ..... Sheet



No. 2



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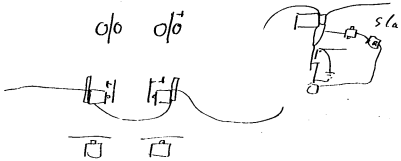

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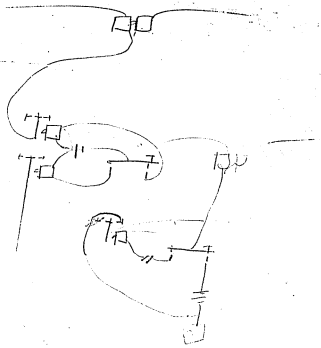

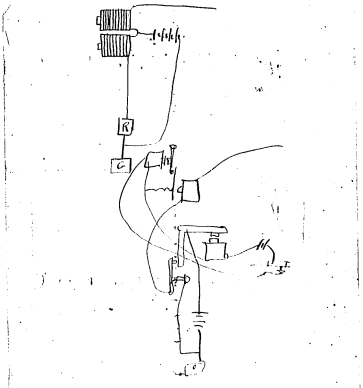

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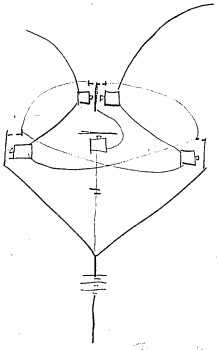
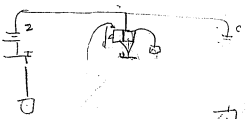
Message No. ..... The Western Union Telegraph Company, Letter

From ..... Sheet





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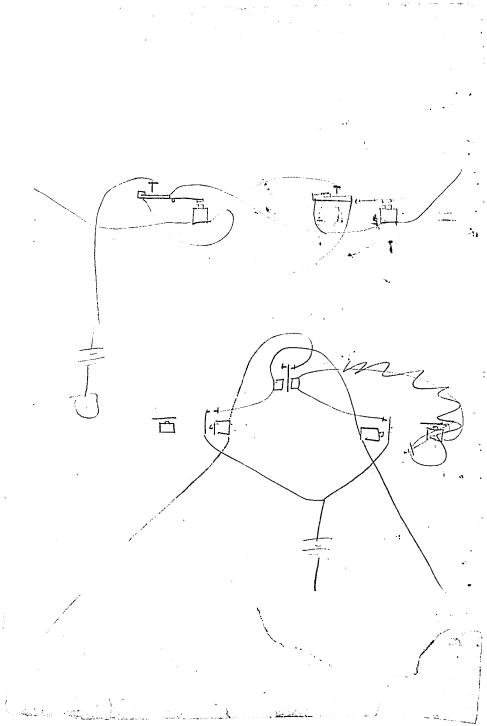

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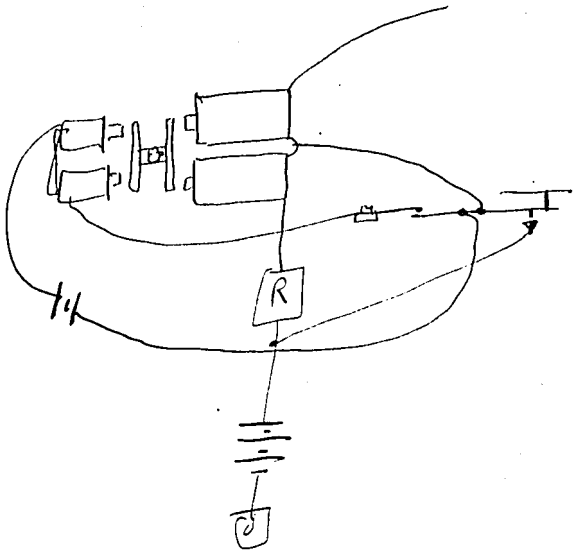

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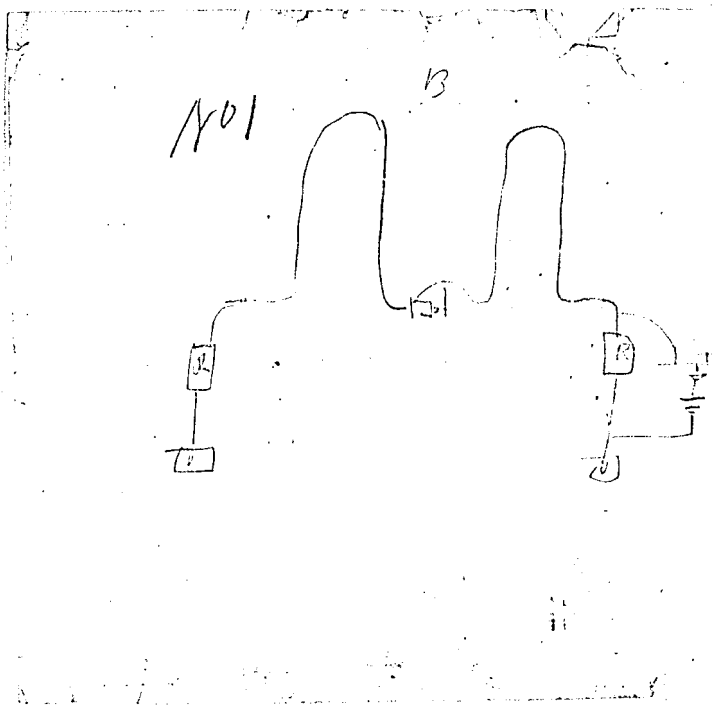

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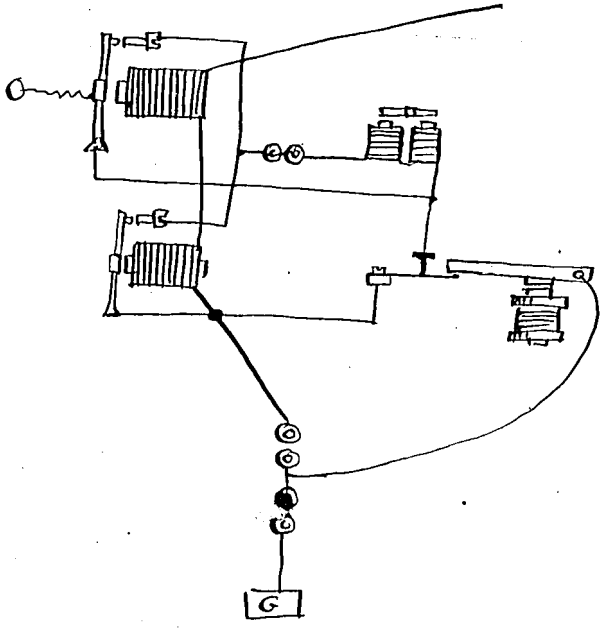

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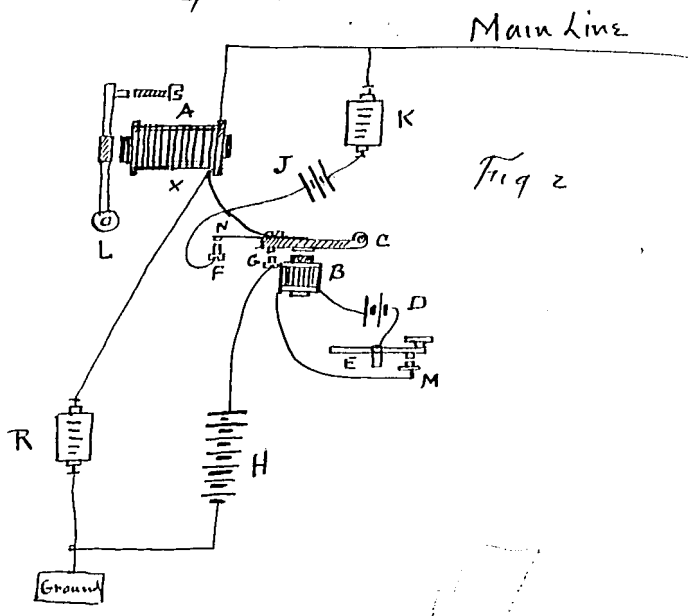
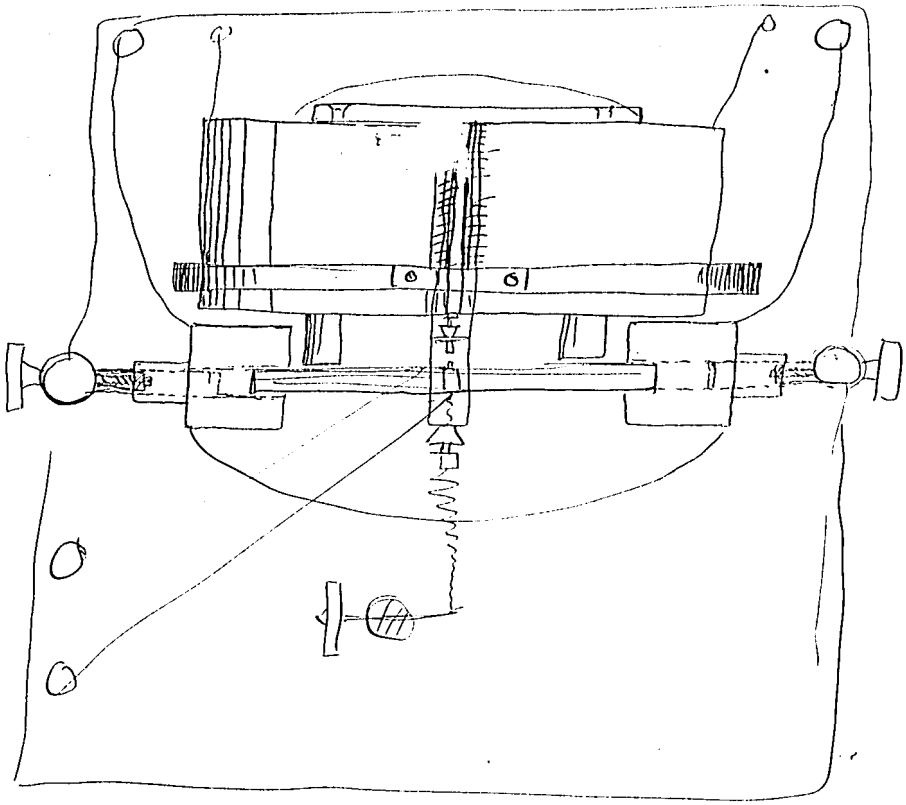


A is the relay B is the sounder E the Key D a local battery R & K resistances J a neutralizing battery. H the main battery When the Key E is worked the sounder works with it. so when it is closed the Lever C is brought down ~~the~~ putting the battery on the Line through the point G a portion of the current from the battery going to the ground through R

3-3



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3-3

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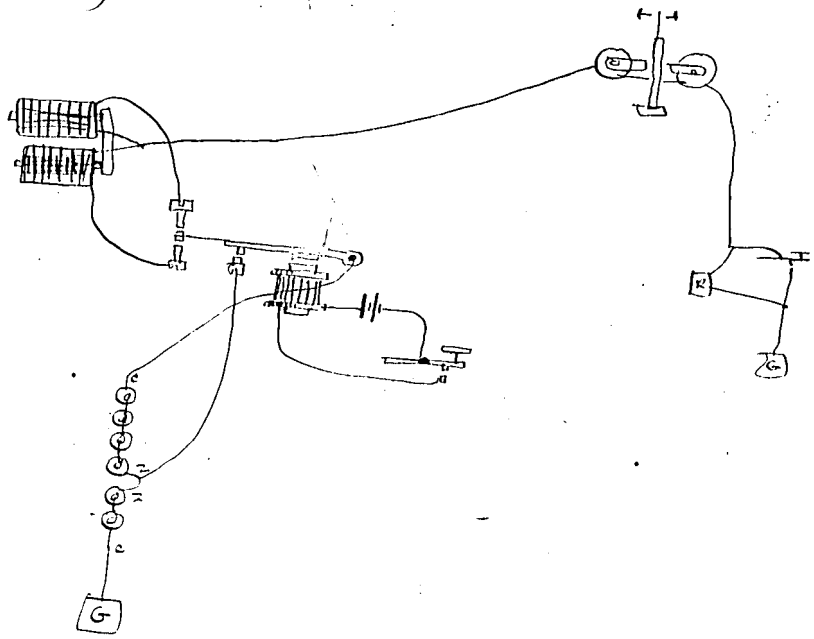
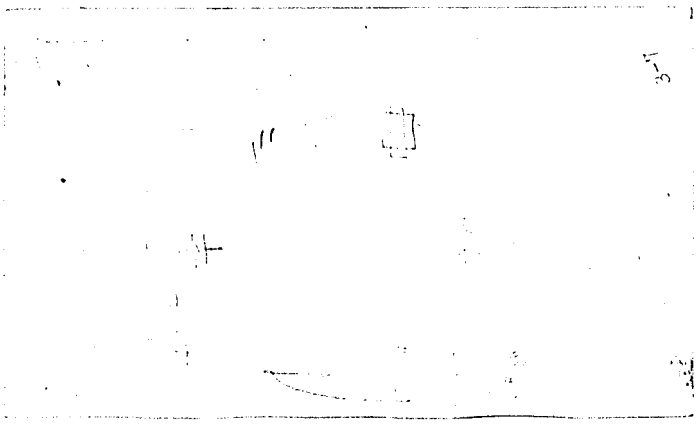




3

(PLEASE RETURN THIS NOTICE [illegible]H YOUR REMITTANCE.)

The Commonwealth Life Insurance Co.

OF NEW YORK,

No. 178 BROADWAY.

Mr. T. A. Edison

The premium on your Policy No. 4957 *for* 4 *Months will be due on the* 30th *day of* July 1872

Cash Premium, $ 69.62

Cash Interest, $

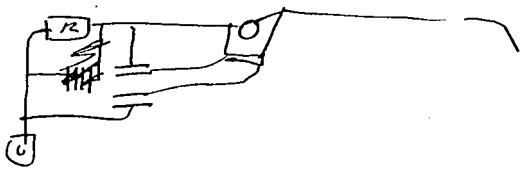
Total Cash Due, $ 69.62

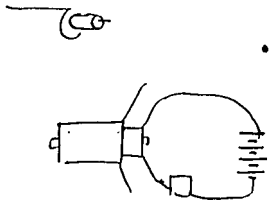
Blanchard & Smith
Managers

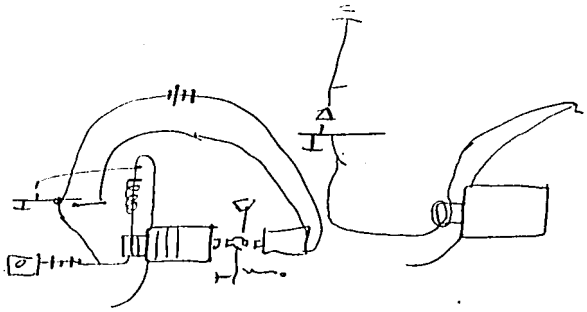
H. F. HOMES, Sec'y.

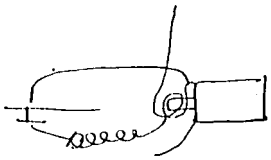
ALL CHECKS AND MONEY ORDERS TO BE MADE PAYABLE TO THE COMMONWEALTH LIFE INSURANCE CO.

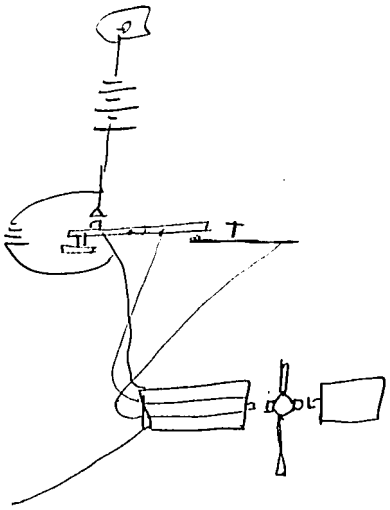
3











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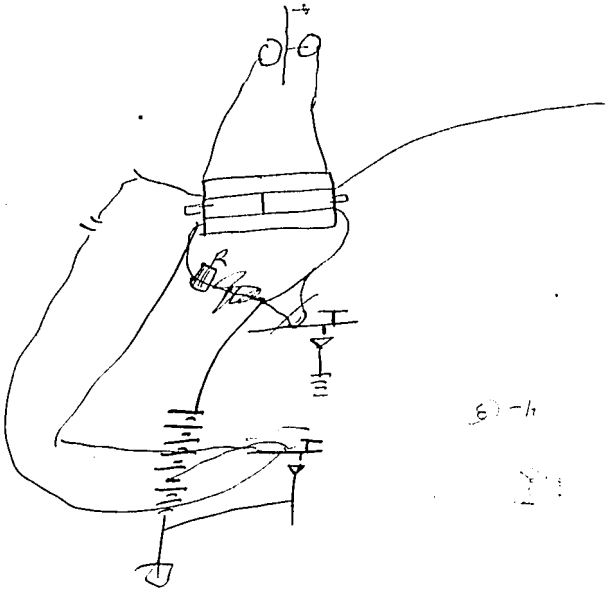
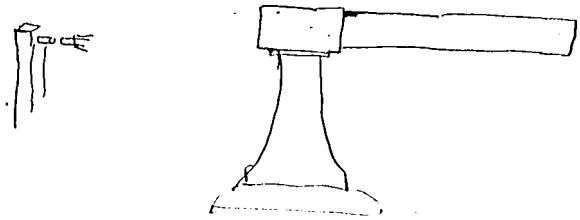
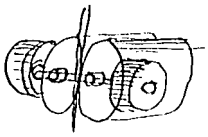
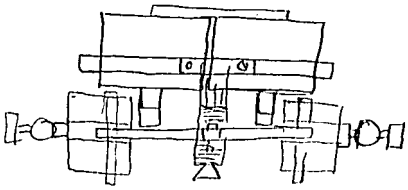






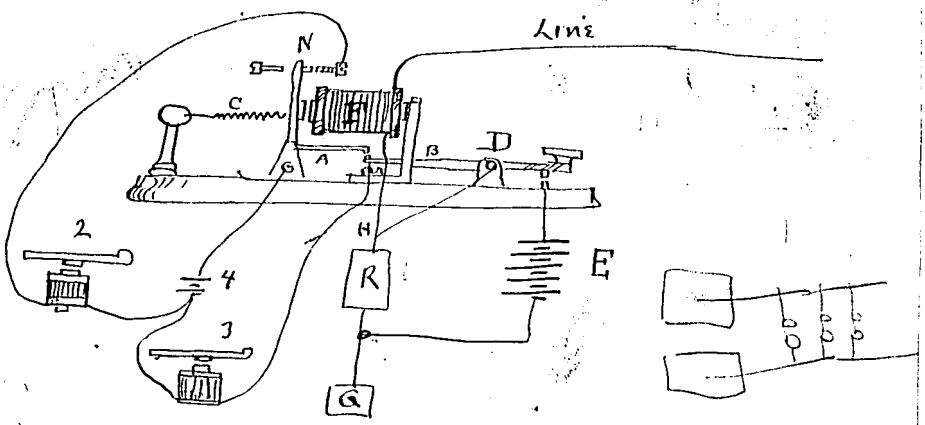


4

Telegraphing.

The object of this invention is to transmit two despatches in opposite and the same direction over one wire at the same time

The invention consists in the mode of rendering nil the effect of the outgoing current upon the receiving magnet.
Fig. 1. represents one device



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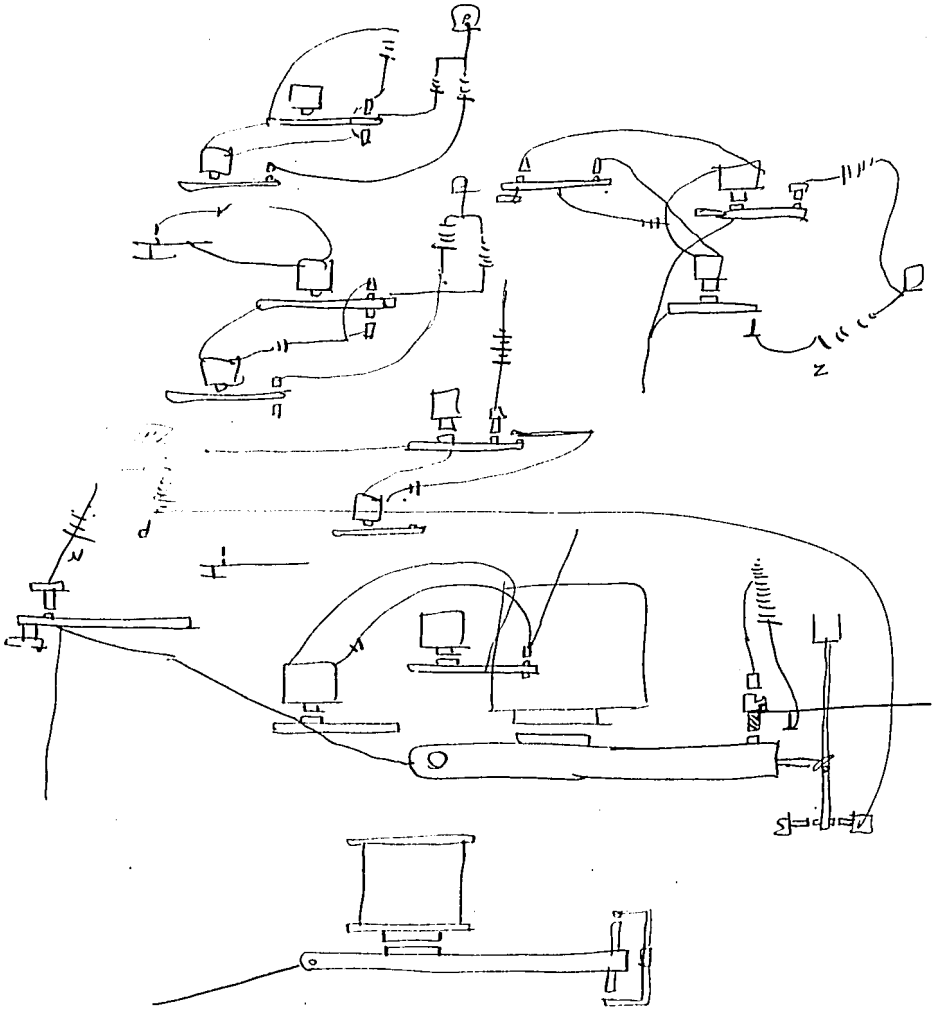
4



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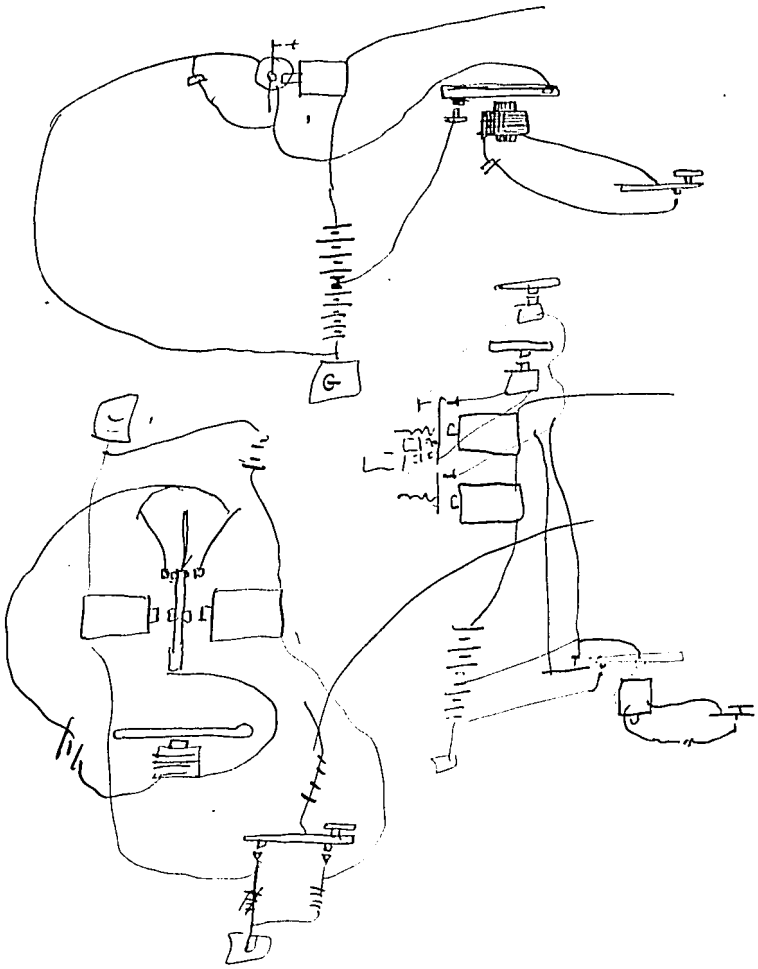

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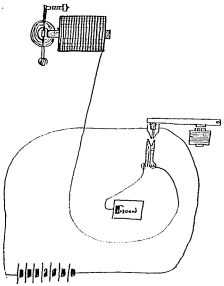

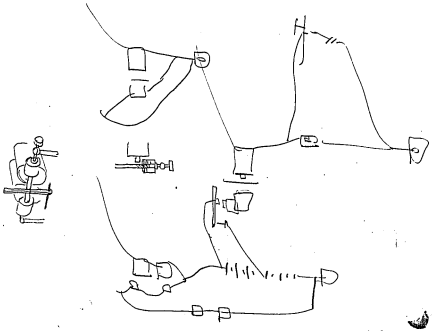

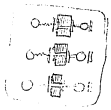

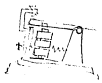

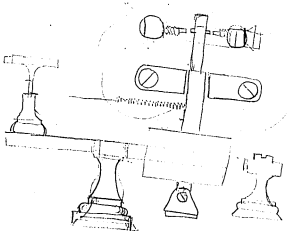

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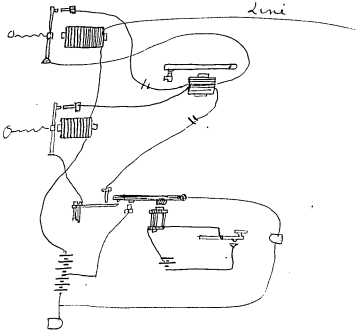
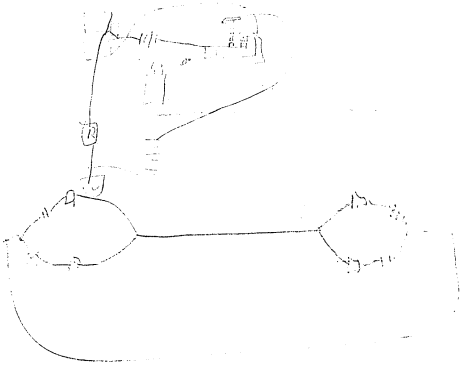


Brown

Amatrur Electrician -

5-3

5



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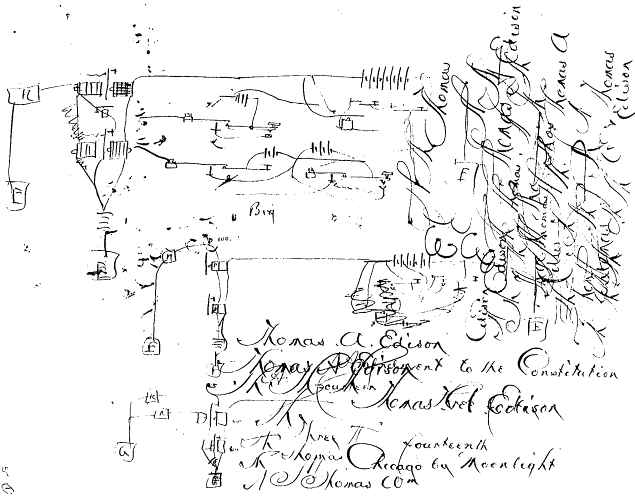
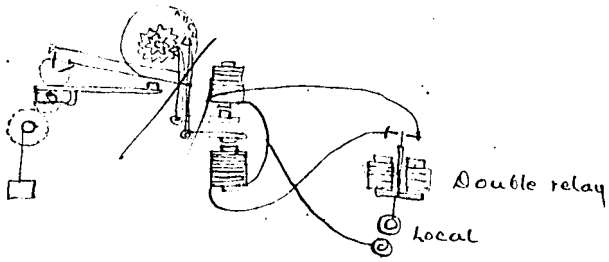

Big
Thomas A. Edison
Amendment to the Constitution
Thomas Alva Edison
Three
fourteenth
Chicago by Moonlight
Thomas

Thomas A. Edison

Thomas A. Edison
Telegraph Engineer
50 Broadway
New York

Thomas
A. Thomas A. Edison

1861 No 2147. Meinrad Theiler, Printing Telegraphs.
Suitable Private lines. – Double pointed relay, polarized
= Local Battery. Transmitter: Key" Clockwork does printing
Type wheel related directly by local battery. Two
Escapements on type wheel, coiled springs – probably
same as Rowes Escapement, type wheel returns
zero each letter printed. inked by band, reversed current no drawings



Second arrangement. single relay – no reversed current.
Local = Long an short currents sent by Morse Key
short currents works type wheel magnet long
current works either a second relay or
Mechanical device which in responding to
Long Current Cuts in printing ~~mech~~ magnet

~~rotort~~ the lever of which cuts type wheel
magnet ~~aut~~ = no drawings, says keyboard can be used, obscure =

1862. No 1065. Frank Yo[illegible] Telegraphic Dial printing apparatus. Clockwork for rotating type wheel. printing direct by magnetism, printing magnet in local battery. operated by a mechanism operated by type wheel escapement inked by roller ratchet paper feed. Dial & pointer attached Trans. Kinnaps pendulum & clockwork, printing provided with certainly by throwing in a gear ~~wheel~~ into regular train gear should it vibrate — drawings. Obscure.

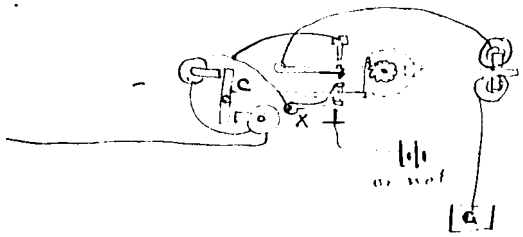
1845 No 10,939 Jacob Brett. printing telegraph pneumatic clockwork, keyboard transmitter long shaft winded clockwork friction & pins arrangt. fly governor, open & closed circuit wheel on the shaft. Escapement pins inside type W — ink roller plumbago nib

Hydraulic regulator for effecting printing. Propelling lever ratchet wheel & pawl feed etc drawn in towards Type by a race & crank operated by a Cam released by Hydraulic piston or valve

Siemens — of 1880 Ernst Werner „ Siemens No 13062
Key board trans for printing. Keys arranged in a Demicircle, Type wheel made of thin watch spring spokes raising, with letters soldered on end ptg on side
Escapement lever operated direct with magnet single printing lever magnet direct

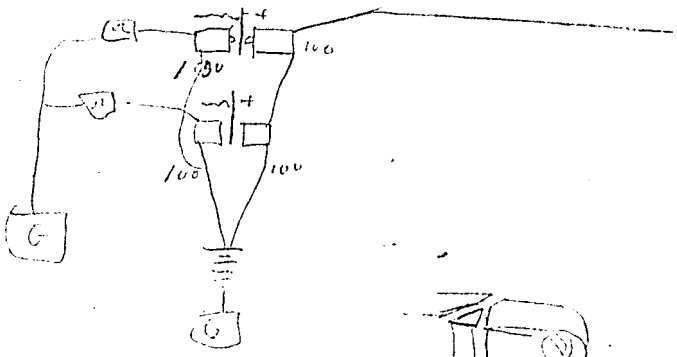
Siemens Magnet

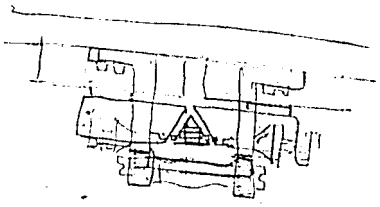
Thus:



Printing lever places X which moves independt of C back towards vibrates if towards that C is self vibrating & slants quick

2





1865 No 2356. Wm Clark Com from Kirk Boyle etc
Printing Telegraphs Transmitter punched paper
p & N Currents, Double magnets, polarized armatu-
& Vibrating bst. pieces Escpt. type wheel fastened
on shaft by spring to all present Chang Thereon
cent of wheel b rotation & Vibrating print
on Component Lever which closes printing
Local Circuit when Vibration ceases. Clockwork
for both printing & Type wheel. V wheel to hold
type wheel steady when printing

1854 No 1225. Edward Orange Wildman Whitehouse
Printing Telegraphs. Spring & Barten = 28 Keys
Connected to 28 Buttons spring on type shaft
revolving Relay. Polarized relay. Double point
Closing local circuit of type Escpt. thro
Lever closed by [illegible] on type wheel
(Locks Hampshire)

6

1841 No 9204. Thos Wright & Alex Bain.
Printing Telegraphs. Clockwork. magnet
working Escapement. prints by drop of
Governor balls when train gears arrested.
Ø obscure.

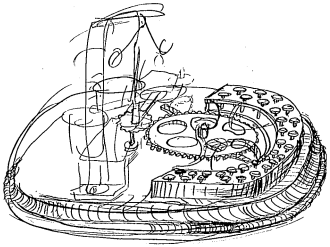
1860. 483 – Pierre Antoine Joseph Dujardin
Type wheel of metal letters of soft spongy
sub capable retaining only ink, no inking rollers,
flannell pad, when printing type depressed
small portion of ink but printing lever
supplied it. two clockworks 1 for type w
other for print. Hand transmitter print.
done by depressing handle times.
Escapement worked by double polarised
Magnet extra lever on polarised magnet
Closer local circuit when printing magnet
this lever dont respond when work
quick Very good pts =

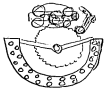
6

1864. 1873 Desjardin

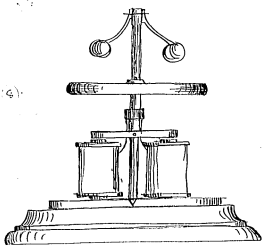
Modification. Self relaking escapement which sends back to Transmitting stations the number of its relation magnet lever rotates with it but keeps clear & does not relaid it until ~~to~~ Cancel intercepted at home station, polarised double relay vibrating

1880. No 1819. Gerard Brett printing Telegh
Clockwork for type wheel. Double polarised magnets. Armature which works Escapement. This lever has 2 ~~stop~~ points Connected to magnetic local halting This magnet does not act when lever vibrated when stopped Release a shaft which in going one revolution closes ~~stop~~ a local Circuit in which is pendulum mag which prevents effects due at ~~t~~ also Closes second mag which lift detent escape & type wheel flies back zero



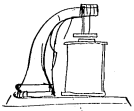


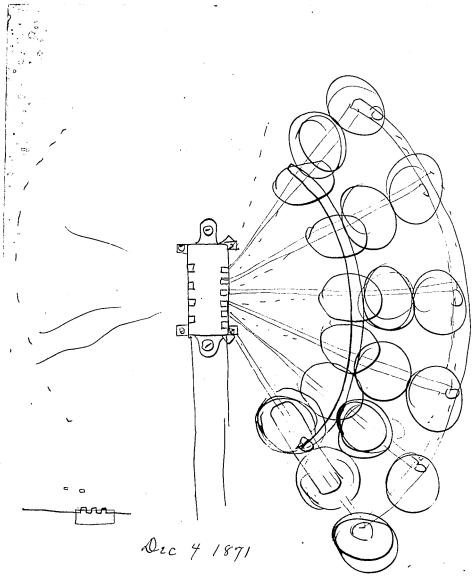
Dec 15 1871



6

Dec 15 1871

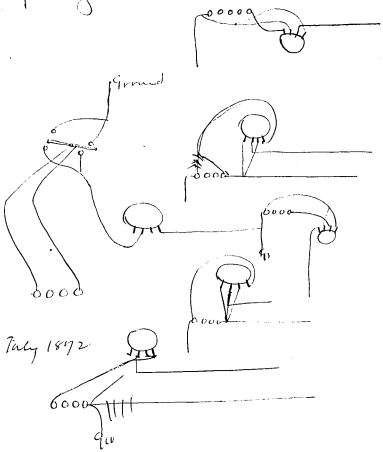




Dec 4 1871

2

The invention consists ~~with the~~ in the combination of a number of finger keys arranged under ~~a cyl~~ under a cylinder or drum and actuating contact springs



7-8

7

OFFICE OF

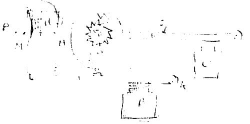
Newark Telegraph Works,

No. 15 RAILROAD AVENUE.

Opposite Market Street Depot.

WILLIAM UNGER, }
T. A. EDISON. }

Newark, N. J. 187



[illegible]

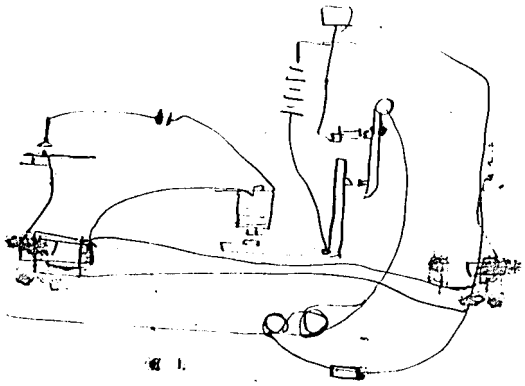
C is the Magnet [illegible] rotating the [illegible] Lever F [illegible]

2

[illegible]

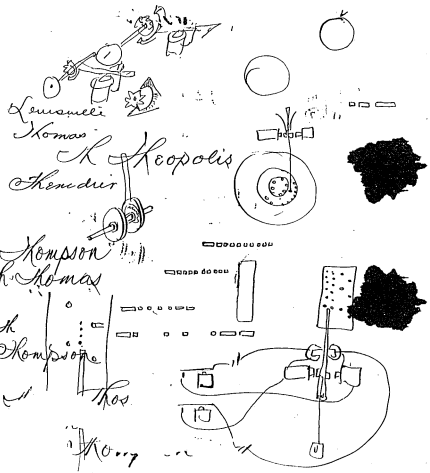
E is the Printing lever [illegible] the Magnet [illegible] [illegible] the current is closed [illegible]

The Printing lever E is [illegible] when the current [illegible] Magnet [illegible]



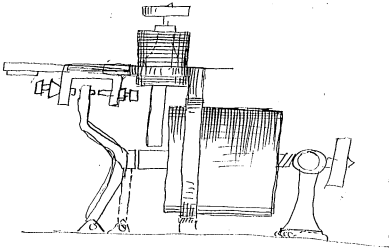
Message No. The Western Union Telegraph Company, Letter

From Sheet



K Whatever

Griffin. G



Than

8

(2)

battery and so connecting the coils that when the main line current enters the relay, the magnetism induced by the local battery is neutralized the consequence of which is that a current due to the demagnetization of the iron core will be sent upon the line in the same direction as the main current thus helping it instead of neutralizing as an ordinary relay or magnet would and when the main current is broken the iron core becomes instantly magnetized again by the local battery and the act of magnetization would send a current upon the main line in the opposite direction thus neutralizing the currents due to the discharge of the line. Thus the ordinary relay magnetizes the core when the current is closed. but in this relay the magnetism which is already in the core by reason of the local battery is neutralized the consequence of which is to reverse the direction of the

(3)

inductive current and use them for discharging or neutralizing the current due to the discharge of the line =

I place a number of these relays along the line to neutralize the discharge current at every part of the line at the same instant

These magnets may be surrounded with armature levers & adjusting springs, the same as the ordinary Morse Relay and used as a sounding instrument

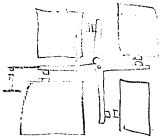
The adjustment of the local battery may be done by a Rheostat described in a late previous patent =

The local battery & coil may be dispensed with and an adjustable permanent magnet used

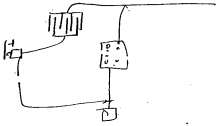
I claim one or magnets as described placed in a chemical telegraph line for the purpose set forth =

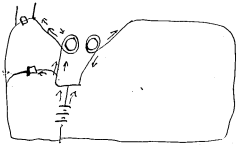
Washington

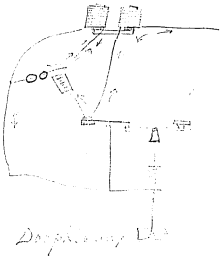
8

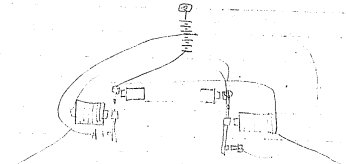


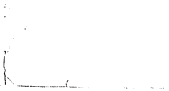
The effect of placing Electro-magnets in the main line of a Chemical telegraph is to neutralize a portion of the signal by sending a Counter current and when the battery current is broken the relays or magnets send a current in the same direction and prolong the signal beyond that prolongation due to the discharge of the line. I have taken advantage of this coil by placing these magnets in a short current or shunt where the conditions are reversed and when the signal commences the current set up is against the current coming down the shunt but with the one going down the paper the consequence of which is to augment the the blackness of the mark and when the battery is taken off the relays discharge a Counter Current neutralizing the current due to the discharge of the line thus leaving a perfect character upon the paper. I also now place relays or magnets upon the line which are the opposite of the ordinary relay or magnet which causes a prolongation of the current, by putting an Extra coil of wire upon the magnet and magnetizing it by a constant local

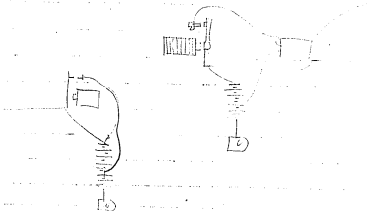


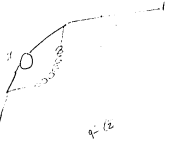












"Terms"

Brief is a general letting drop.

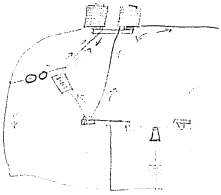
Buyer or seller say 13 means sold

1, to be delivered at [illegible]

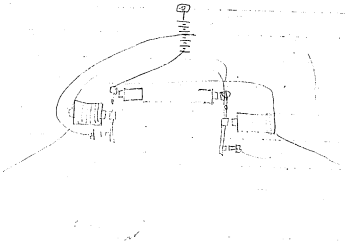
Cash – Gold Port. G.

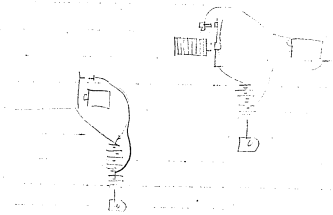
Leaves a vacancy for a 1/16 =

9



Depositary Lab



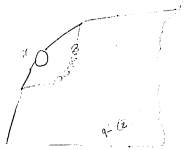


"Terms"

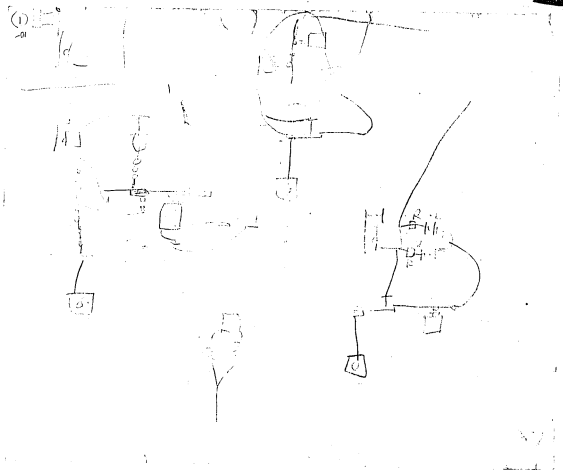
Self is a general defining drop.
Buyer or Seller say B means sold
1, to delivered at next delivery drop

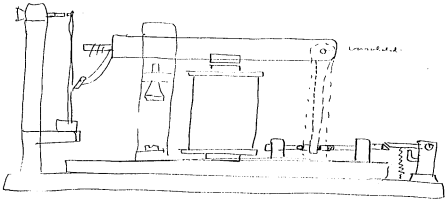
Cash – Gold Put G,

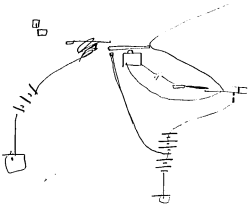
Leaves a vacancy for a 1/2 =



9







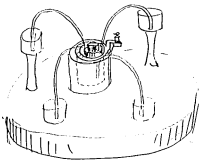
10

Filter Prussiate Potash Solution through Bone black or Charcoal

Make a battery with powdered carbon and solid carbon in a porous cell and use red fluid.

Also one with powdered Zinc in a bag or cloth in a Callaud battery.

Arrange a battery with syphon thus



Add chloride of Sodium to a Prussiate solution to make it clear
Also to acid solution.

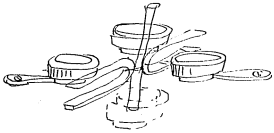
10-(3)

Prussian Blue is dissolved in Rain water acidulated with oxalic A.

The Gold and Stock Telegraph Co.,
Executive Offices,
No. 61 Broadway, New York.

MARSHALL LEFFERTS, President.
JOSEPH M. COOK, Vice-Pres't.
NORMAN C. MILLER, Sec'y & Treas'r.
GEO. B. SCOTT, Sup't.

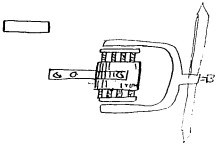
New York, ... 187



Electro motor

fine wire Thrible quantity Connected

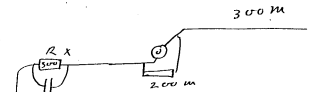
also



The Closed circuit in a contrary direction & thus discharge current made equal to the failing produced by the receiving mechanical bearing out of the Centre of revolution & to lose induction =

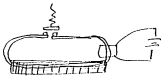
1

11

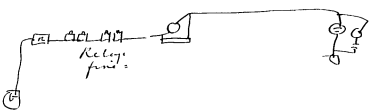


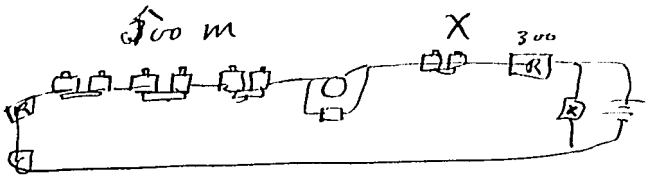
6 leaves out
Think that our condenser too large
want to get center point by 300 M on R X
and increase or decrease condenser

Make Condenser by taking wires to my
box apart & taking out leaves and
gradually increase =



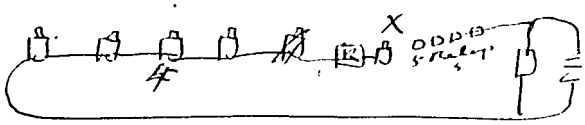
Try





Short circuit

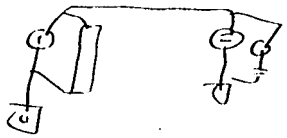
See if X dont discharge quicker



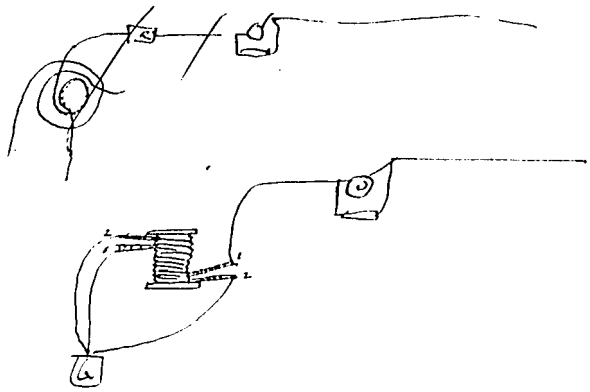
See if X dont discharge quicker

Make a magnet by getting long box and making all long coils into one Thus

Try it this way



Wind a large spool of silk covered wire No 36.
dipped in parafine with 2 wires to be used as
Condenser this to make 500 miles resistance ~~Bradley~~
710



Wind a large resistance magnet Bradley with
that fine wire and put a piece tin foil
between with shellac paper have each piece
tin foil fastened to gilter & connected to
ground and Artificial pass through fine
wire

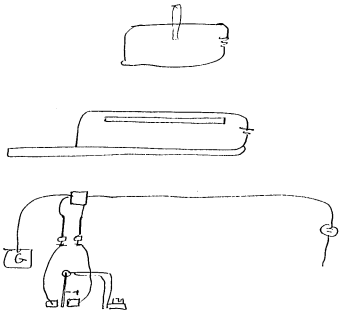
11-60

The perforated paper is drawn rapidly between metal rollers included in the Electric Circuit. The upper roller being suitably shaped to Enter the perforations and mounted at the extremity of an arm acted upon by a helical spring

Whitehouse – Chemical Telegraph – To obtain infinitessimal Earth Contacts platinum, (especially connected to the line & ~~too~~ Earth plate are welded into a glass tube Containing distilled water or oil fluid.

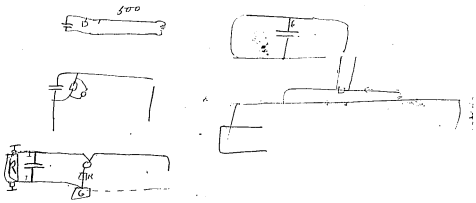
Aro. patent using two leaks at Each End of the line made of Germanium wire to strengthen the line of the electric Current.

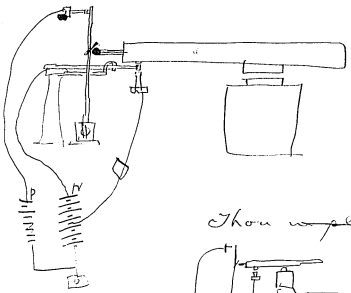
Early used leaks.

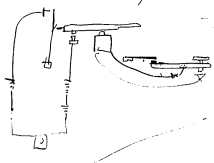


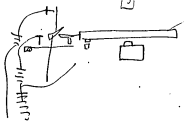
Pith Relay

11


500
B
C







by the same amount of resistance in the artificial line.
When this is done there is a discharge current from the artificial cable or line contrary to the regular current, leaving the writing sharp and clear except at very high speeds isolated dots are weakened to too much counter charge
but if the instrument is placed in the artificial circuit, or further away from the center of resistance towards the artificial the discharge current will be in the same direction the amount being gauged by ~~the resistance or the greater or the line side~~ increasing or decreasing the resistance of the artificial cable or line
~~the~~ it can be so gauged that a slight tail or record of the discharge current is shown on the paper in the same direction the isolated dots being as clear as any. this tailing can be got rid of by placing in the shunt which is applied to the chemical paper to preserve our even resistance an electro magnet the discharge of which will ~~take~~ place within

in the centre of resistance and ~~state~~ induction. The signals are perfect at any speed no matter what the inductive capacity of the cable may be, (the artificial cable being made the same) the legibility of the ~~re~~ chemically recorded signals is dependant only upon the tension of the battery if 1000 words per minute is obtained clearly with 50 cups then 100 cups will be necessary to obtain 2000 words as legible.

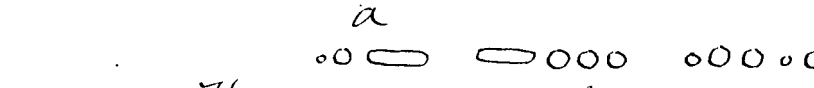
The transmission of waves of electricity are instantaneous no matter what is the length of the Cable. The retardation noticed by Electricians in Cables is ~~due to the~~ not properly retardation but the leyden jar charge sending its current against the charging Current. The same as an electro-magnet placed in an electric current. The first part impulse will be weakened by the Counter charge against the magnetizing Current.

If in my system the instrument is added to the line, and the total resistance, is to be compensated for Resistance of Ch

12

~~one~~ out of the center towards the artificial. the dots come all full but ~~one on~~ with slight tailing but legrable - over the center on line side first dot weakened by return charge undulation against + dot after dash very bad or first dot of dash — in high speed. Make letters this way

a

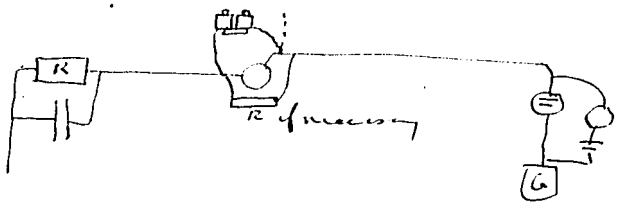


The use of small halos is to charge line but they dont show on paper 1/2 current is sent for dashes + full for dots the dashes are on one row + dots in small double spaces

P 3

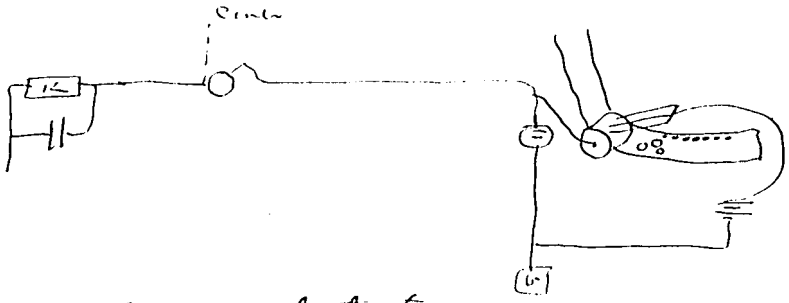
high resistance magnet

Center



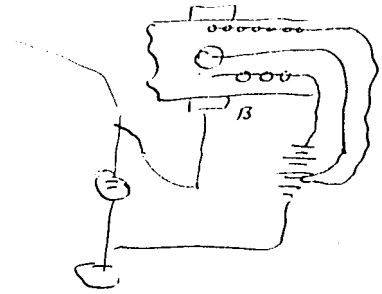
The magnet is used to cut off tailing due to being on other side of center

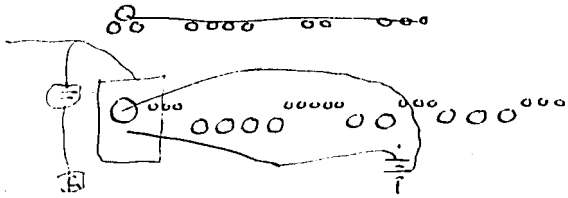
also this



use of small coils to keep time relatively changed with current

also

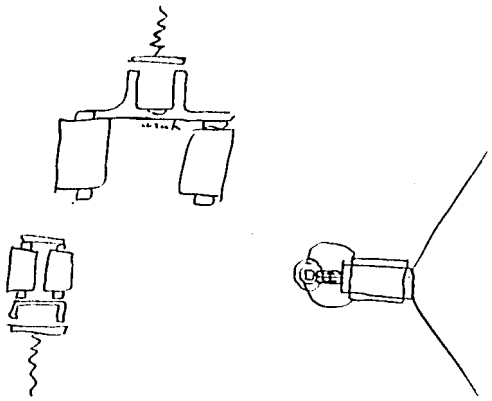


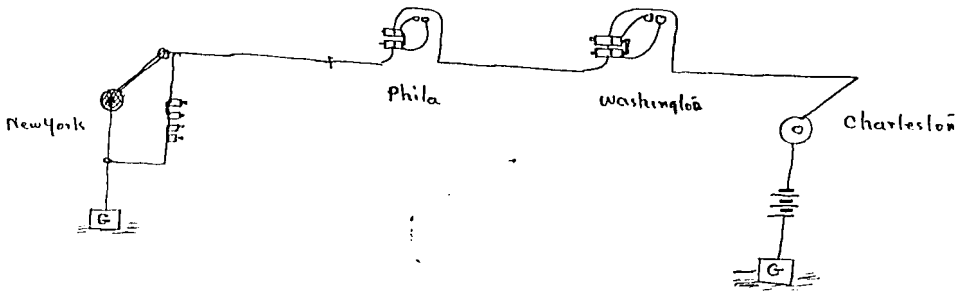


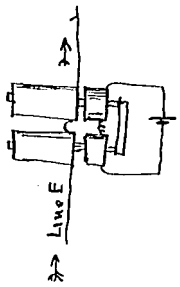
12-4

Borrow Several Regular Rheos from Leffert, [illegible] etc.

Try this

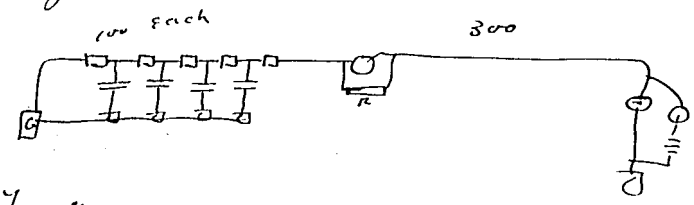




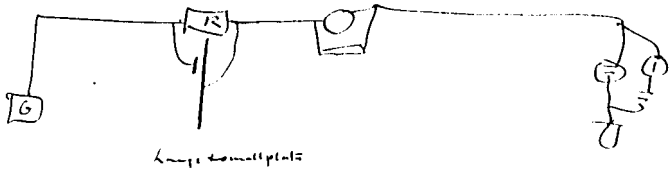


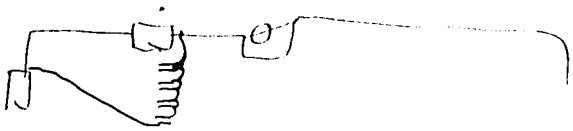
12-10)

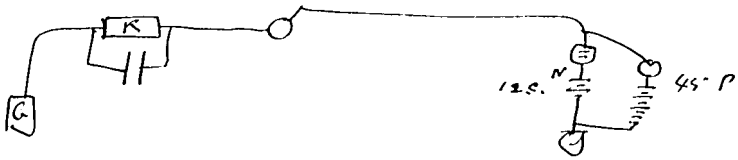
Try this again.

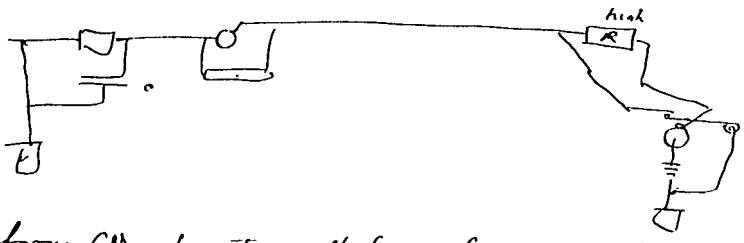


Try this

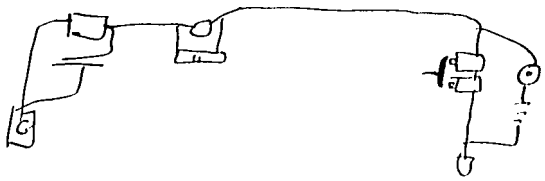


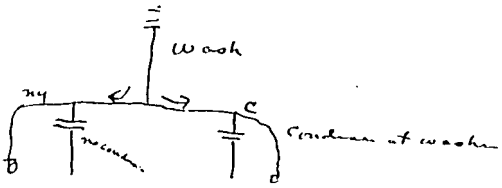






Send from Washington with large battery and high resistance coil, and discharge through No resistance by mechanical Motion of roller form - this will give enormously current little induction & big return change



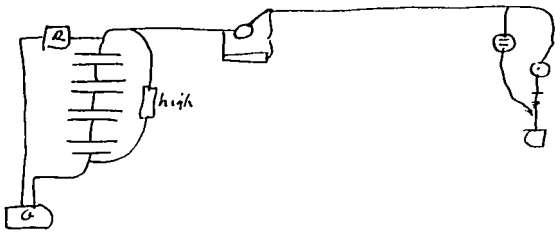


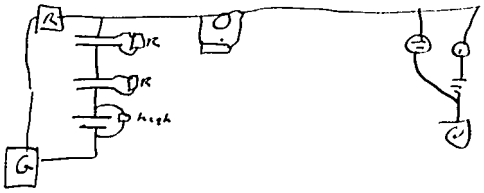
(7)

Make a Condenser with quarter size sheet for line & full for ground

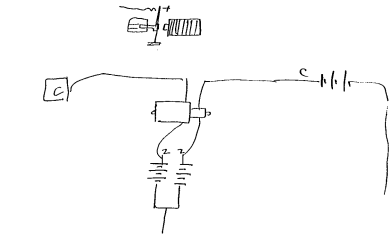
Make a 1/2 Condenser with Mica plates paraffin or tissue paper & paraffin very close together holds charge longer

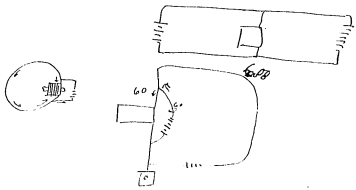
Make Condenser 1/2 3 thickness thick paper between plates =



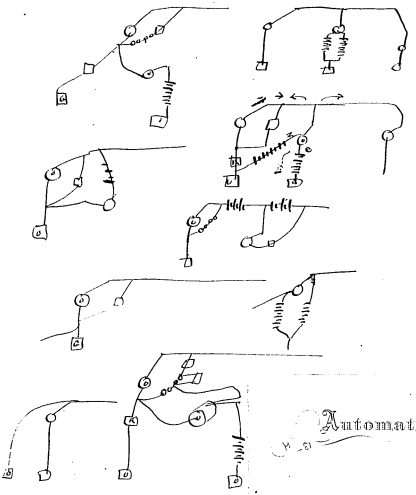


10-.51





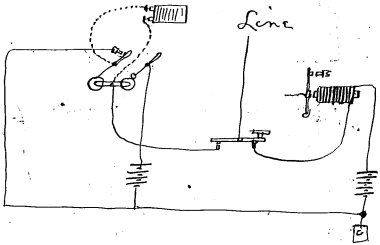
12-19



Automatic Telegraph Company,

80 BROADWAY, ROOM 30.

New York, ... 187



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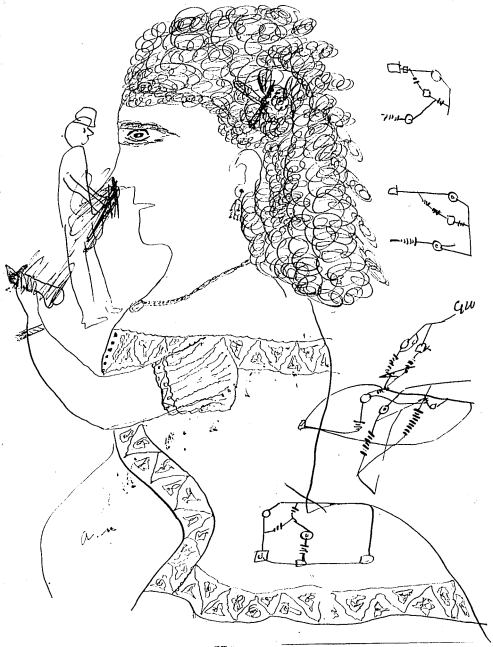

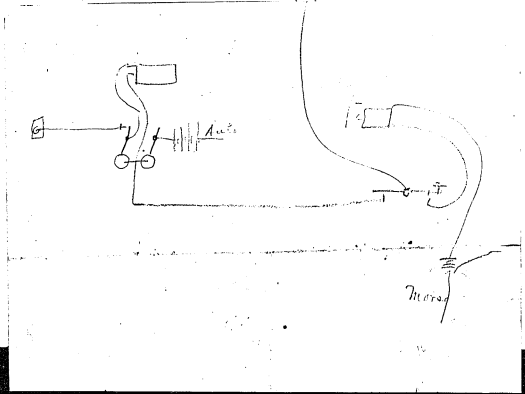

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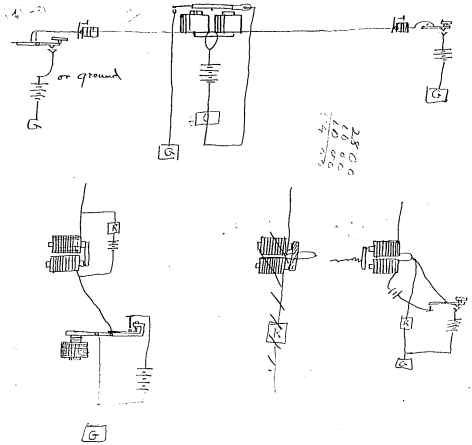
or ground
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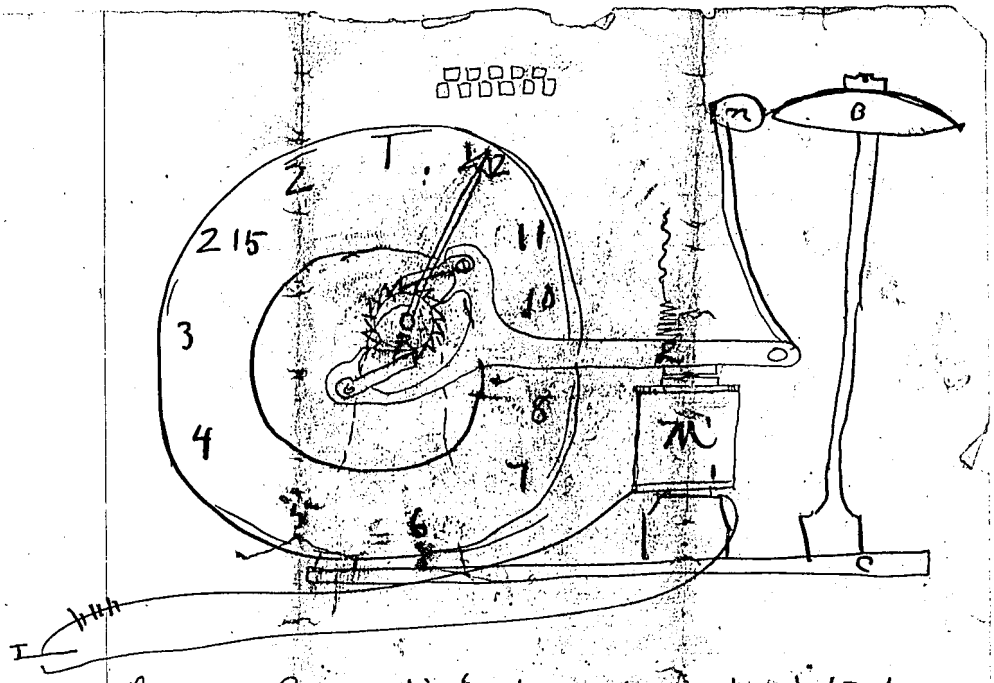


The object of this invention is to produce at a distant station the exact time at given intervals and the striking of a bell to call attention to the time

Description

M is the magnet which operates the Mechanism
B is a bell connected with the base C.
L is the Escapement Lever one end engaging with pawls in a ratchet with clicks the other end having a ball n which strikes the Bell B. Upon the shaft which carries the Ratchet wheel R. is an arm or Pointer = which rotates around a dial which carries upon its surface the hours in Arabic ~~Numerals~~ or Roman Numerals — At each closing of the Magnet the Escapement is rotated one tooth and the bell is

Sounded.

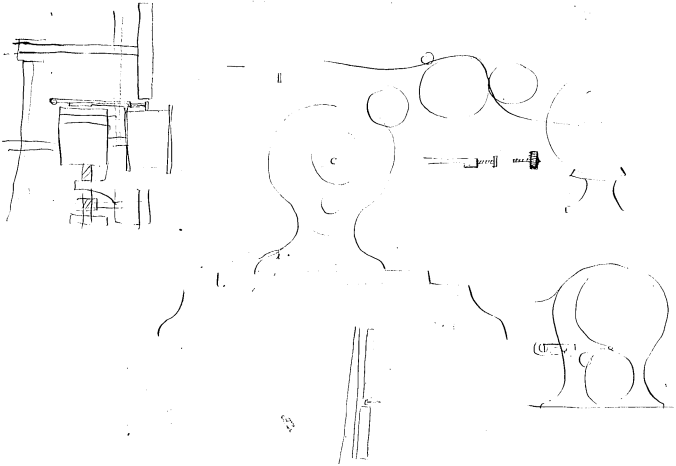
Operation

When a Standard Clock is placed at the Main Station it is so connected with the Main Line containing the Indicators by the usual Devices that when it arrives at a given point a break wheel is set free & the current is intermitted upon the line as many times as is necessary to bring the Indicating Apparatus at the same point as that upon the Regulating Clock = & at every change of position the Bell is sounded = so as to call Notice.

My Claims will probably be

The Combination of ~~an Electro~~ a magnet with the Escapement Indicating Dial & Bell with the Main Regulating Clock arranged & operated substantially as described & for the purpose set forth

13

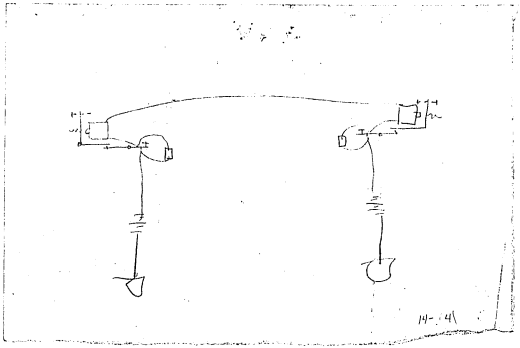


5

at the instant the wire C closes on the point q the points N & P close and ~~throw the~~ throw an opposing Battery J on the relay, which in its but in opposite channels. Effects is equal to the battery H. Consequently the effect is neutralized any variation between the two Batteries being compensated for by upgrading the Rheostate K. to make the Effect of the battery J weak or strong.

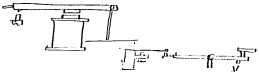
Thus shows

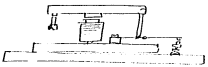
14

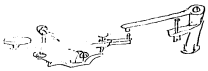


14

14







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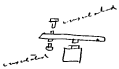
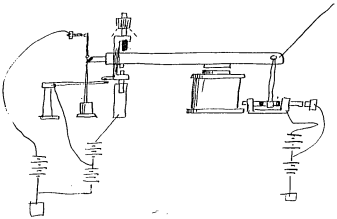
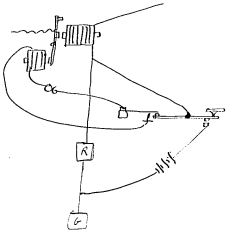
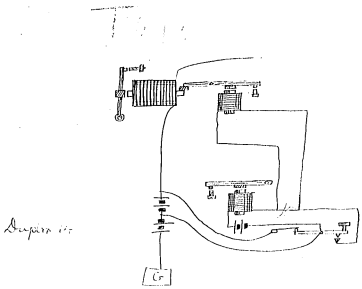


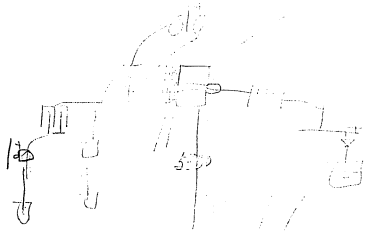
14-5



Duplex







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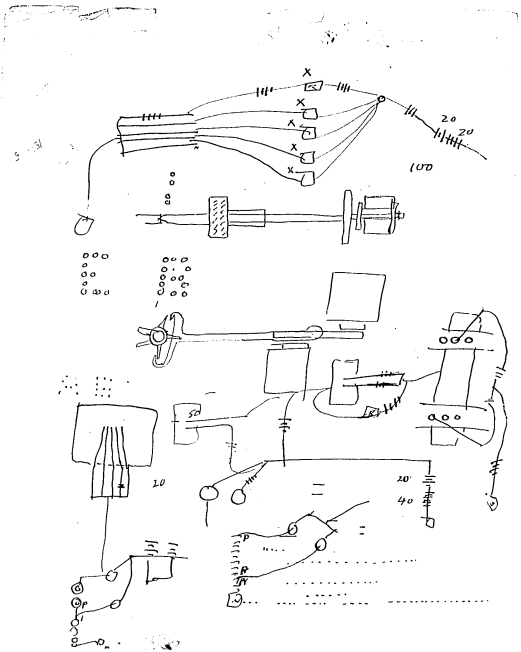
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Themistocles
Lorizago Dora, D'Ostra
Cenebi Portoclui'i
Dorado El Dorado
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This is a specimen

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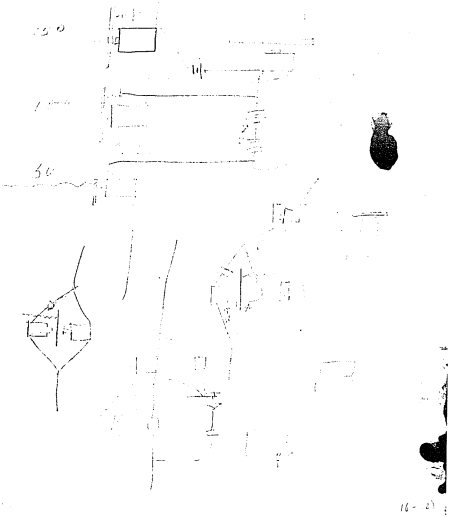
This is a specimen of the blind writing
This is a specimen of the blind writing
The whole district Themis This is a spe
This is a.

ABCDEFGHIJ
KLMNOPQRST

A B C D E F G H I J K L M N O P Q
R S T U W W X Y Z

A yellow oasis in hell -
premeditated stupidity - A phrenological idol.
The sombre dream of the grey-eyed Corsican
A brain so small that an animacule went to view it
with a compound Microscope The wrestling of
shadows, a square chunk of carrion with two green
eyes held by threads of gossamer which float at
midnight on bleak old rural graveyards.
Three million miles beyond the limits of the
universe where the angels dare not go
There flies forever from nihil to nihil the foulest
demon of the Cosmos.

[illegible] Feb. 19, 1915



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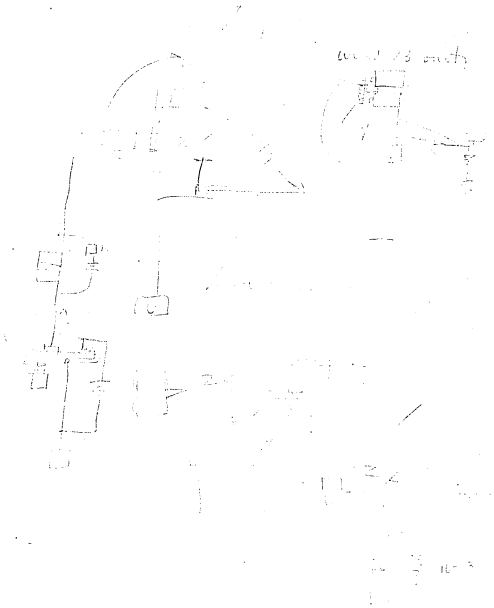
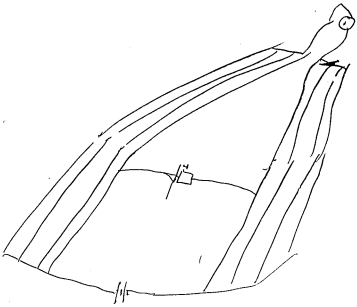
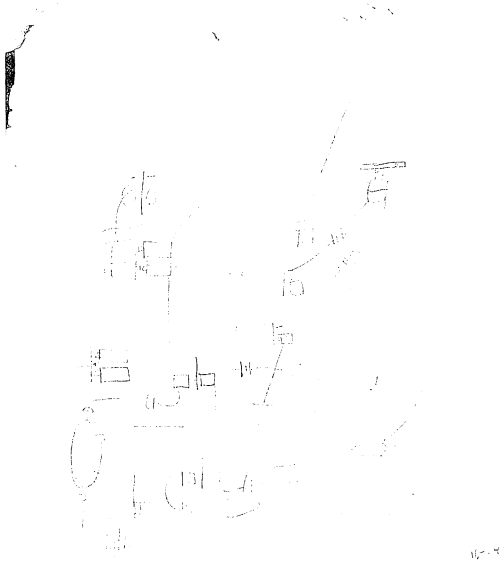
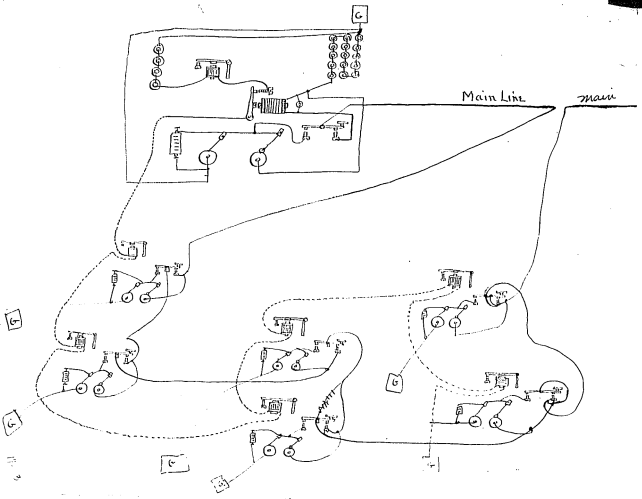


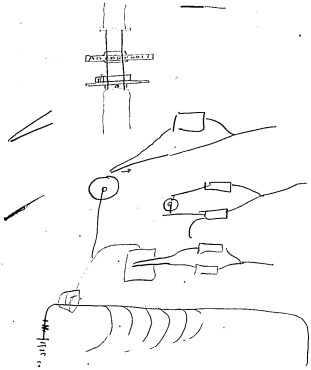




Batchelor.

Please look at Dates of first work for District Alarm what date first expert What it was & all dates & names of men employed on it =





17

OFFICES.

New-York:
66 BROADWAY.

Philadelphia:
310 CHESTNUT STREET.

Washington, D. C.:
1409 PENNSYLVANIA AVE.

THE AUTOMATIC TELEGRAPH COMPANY

No. ..

WILL PLEASE SEND
THE FOLLOWING

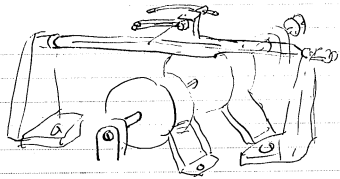
FROM NEW-YORK.

Geo. Harrington,
PRESIDENT.

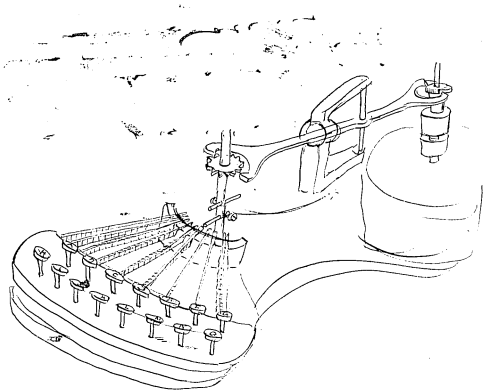
J. C. Reiff,
TREASURER.

To .....

25487



17



Chicago Telegraphing

Two receivers

Telegraph Counter, Transmitter

Two receivers

Transmitter Jathing Counting Wheel

Chicago Chicago Chicago

Cotton Kentucky Kentucky Louisville

Chicago Chicago Chicago

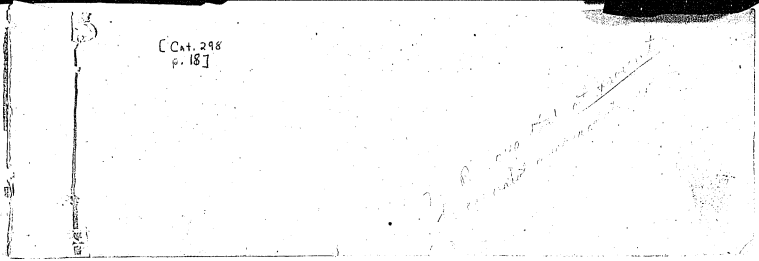
Louisville Louisville Louisville

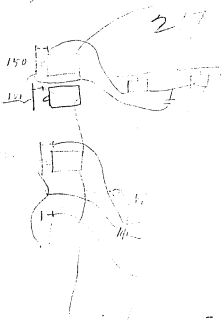
Louisville Louisville Louisville

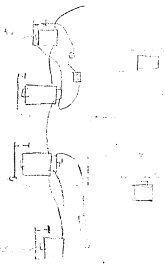
Louisville

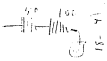
17-2

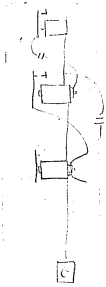
[Cat. 298
p. 18]

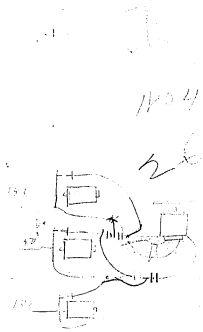


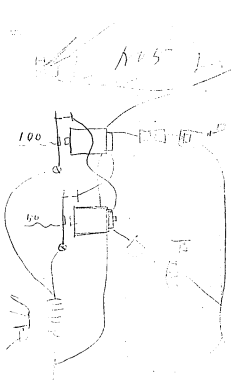









1104
2
100


1105
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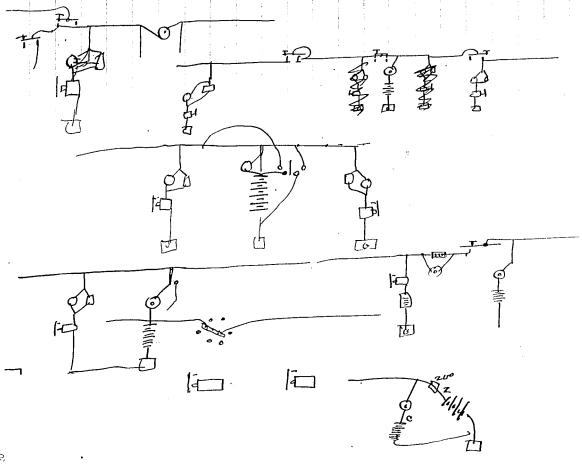


OFFICES.

New-York:
66 BROADWAY.

Philadelphia:
310 CHESTNUT STREET.

Washington, D. C.:
1409 PENNSYLVANIA AVE.

THE AUTOMATIC TELEGRAPH COMPANY

No.

WILL PLEASE SEND
THE FOLLOWING

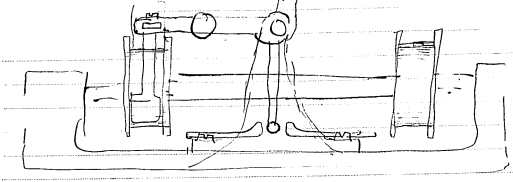
FROM NEW-YORK.

Geo. Harrington,
PRESIDENT.

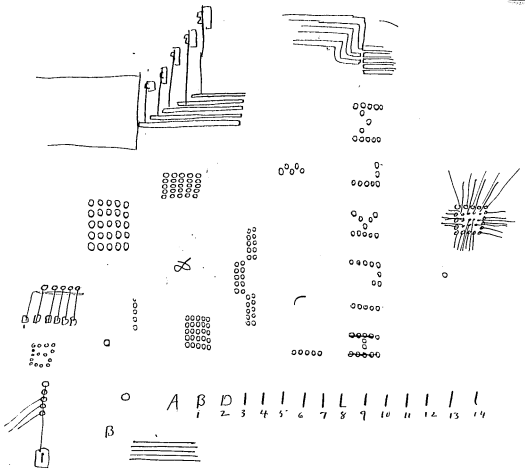
J. C. Reiff,
TREASURER.

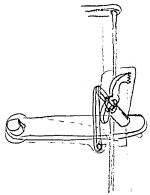
187

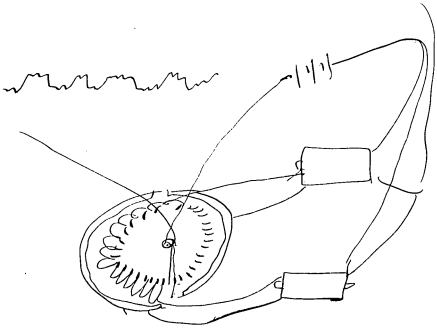
To



19

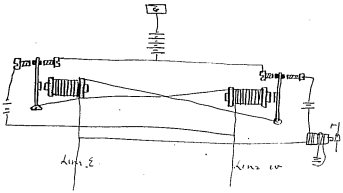

A β D
1 2 3 4 5 6 7 8 9 10 11 12 13 14
β





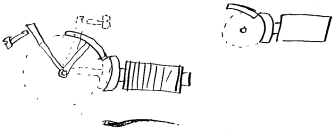
Brown

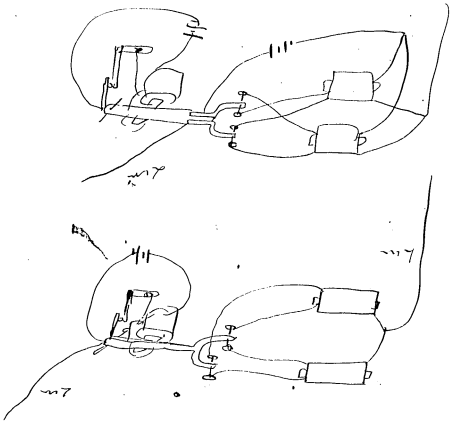
Try this repeater

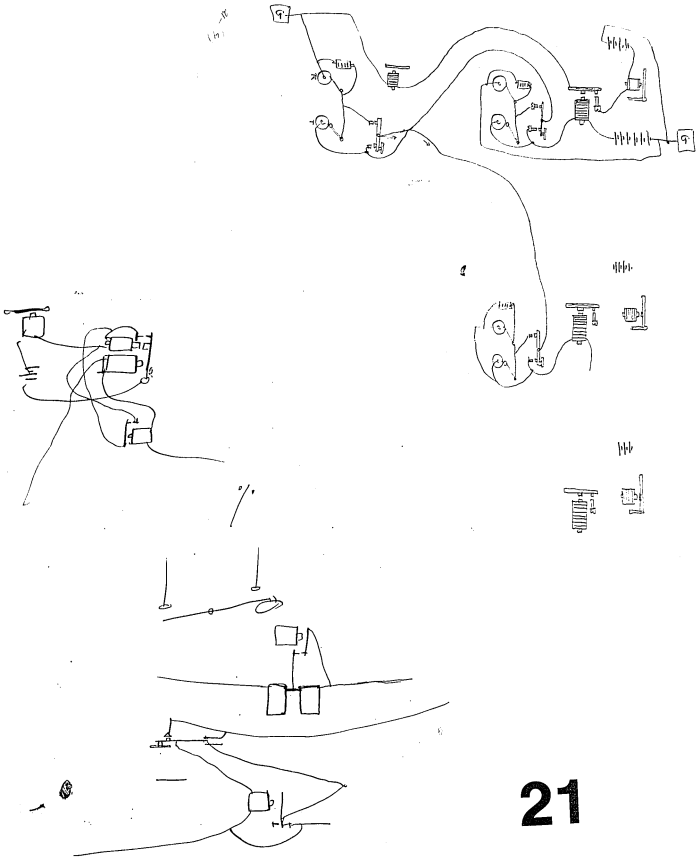


~~Spring if necessary Neck~~

Try this







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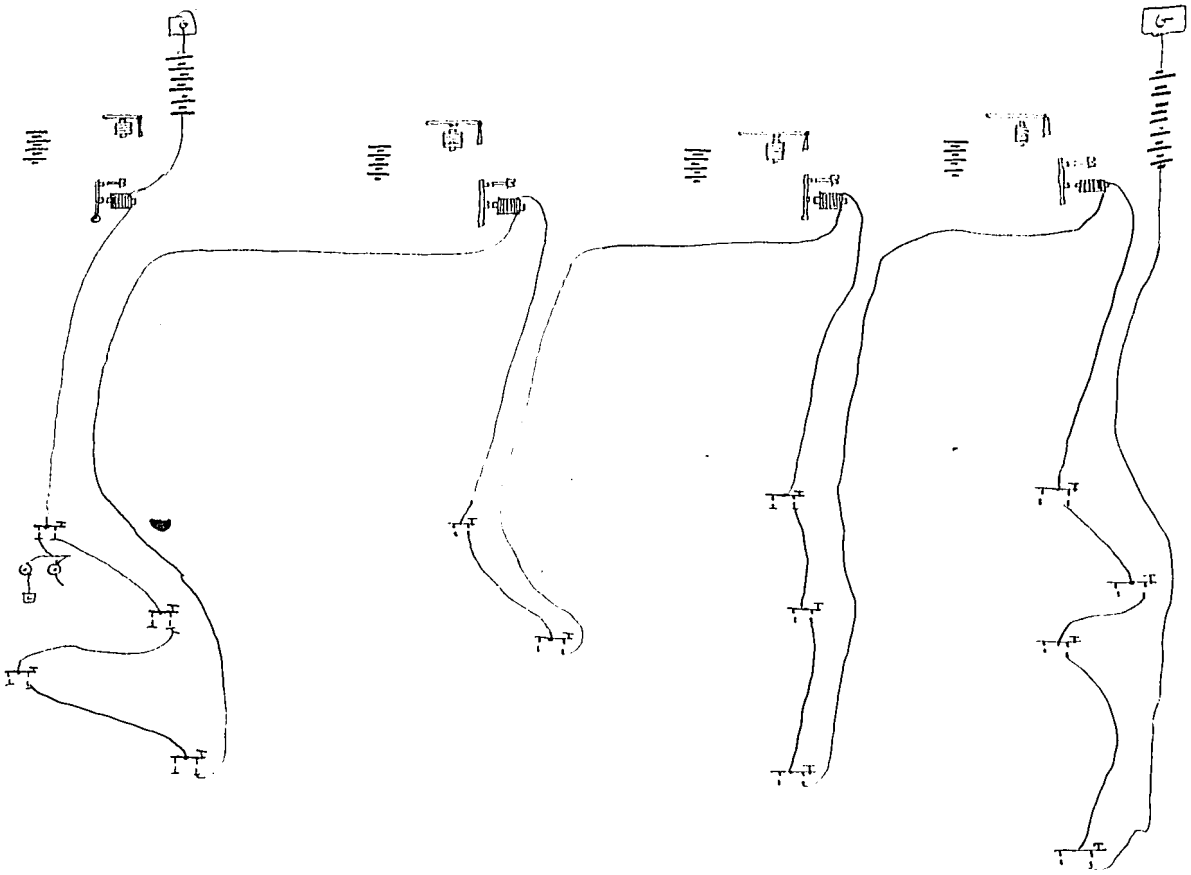
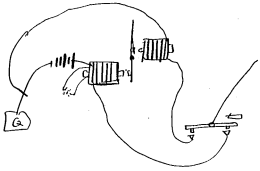
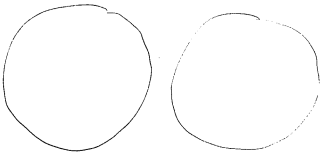




Brown try this



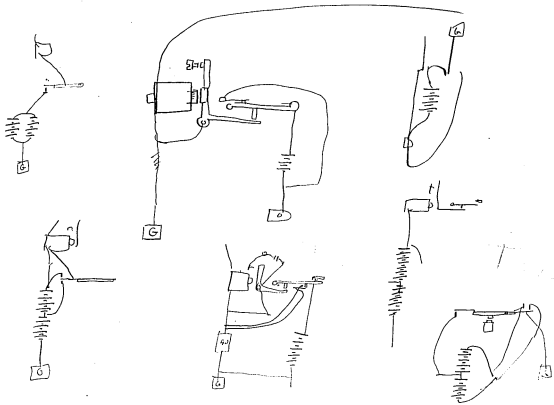
The South

Revolution

The Torosik Norman C Miller

Stanwix J Wm Orton

22



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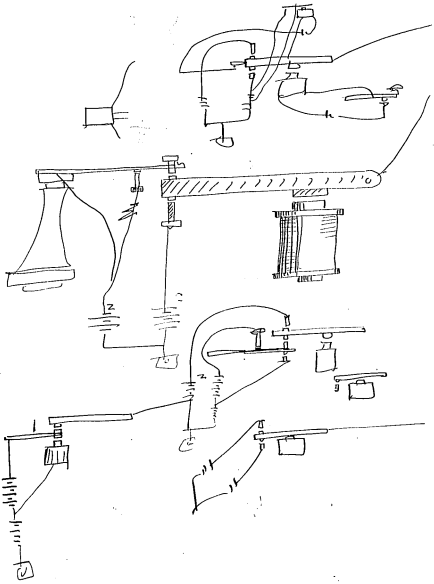
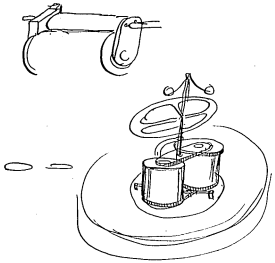


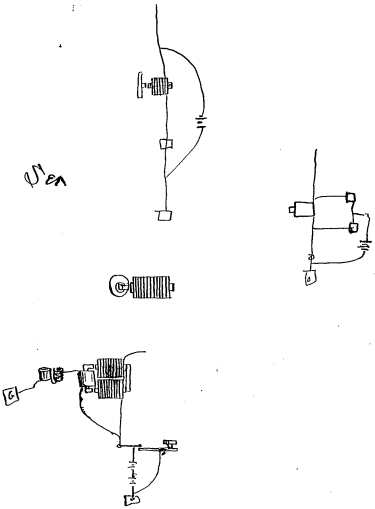


23

Automatic Telegraph Company,

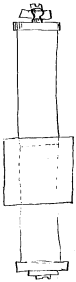
80 BROADWAY, ROOM 30.

New York, ... *187*



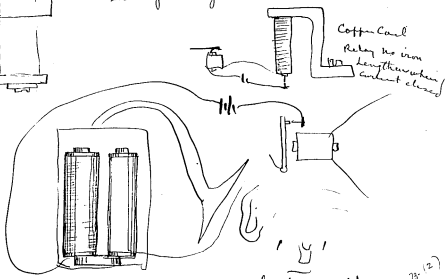
23-41

23



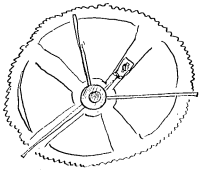
Indicator for Automatic telegraph instead of little Noble in water a glass tube with a sliding Bradley spool - this tube filled with a solution of pt prussiosulphate of iron saturated =

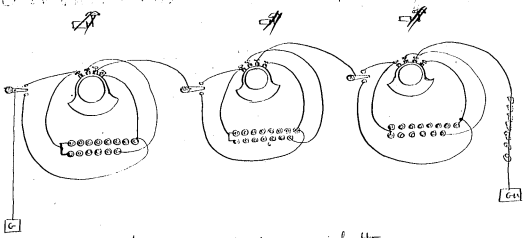
206 p Tyndall, Diamagnetism



a long magnet ~~[illegible]~~ in a tube with a Ear trumpet 30 cups Local on worked by Main line Relay - this will give a sound exactly like a sounder. Tyndall Diamagnetism page 243

23 (2)

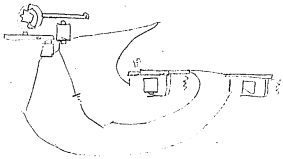




Arranged without a main battery.
The 8 Engine Cups at two places
mentioned in making. 16 cups for main,
for a two mile line each engine should have
18 Cups Cell and =
13

(1) now Cotton 6 miles require 2 mets

Make Model



Two pole and 27 Pot cups

24

24 (2)

Quadruplex.

The object of this invention is to transmit four (4) messages over one wire at the same time two in one direction and two in the other direction.

The invention consists in transmitting positive and negative currents to effect a polarized relay, and increasing and decreasing the same to effect an ordinary relay or magnet, substantially as described in a previous Caveat filed by me relating to this invention;

The invention further consists in providing the polarized and common relays with double coils and arranged an artificial circuit at each end of the line so that the effects of the outgoing battery shall or can be balanced upon the two relays at the receiving stations,

24 5x

24

The invention further Consists in arranging electro magnets shunted arounds the extra Coil of both relays to nullify the Effect of the static Charge upon their relays.

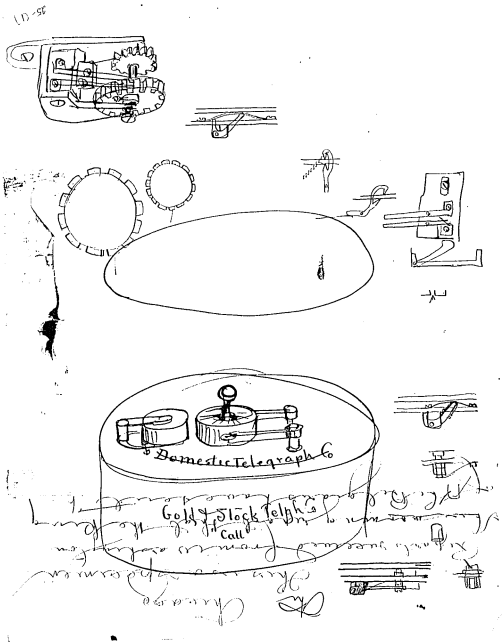
The invention further Consists in shunting the Line coils of the polarized Relays to prevent their self induction being thrown on the line wire,

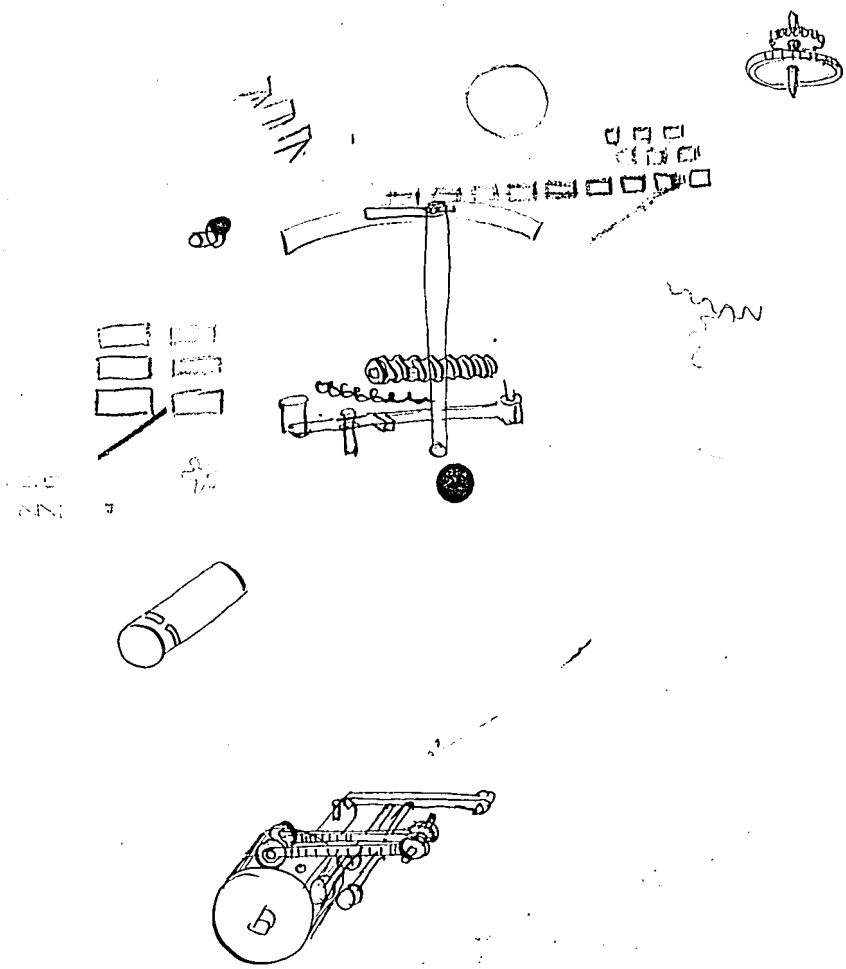
It further Consists in the various Combinations ~~[illegible]~~ and as a whole —

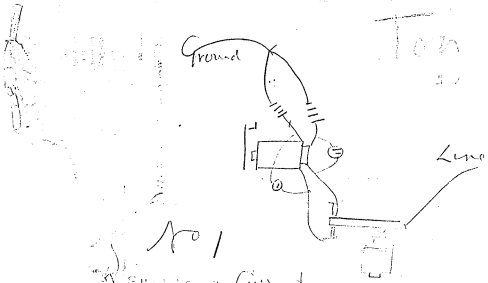
24

Any number of Relays in
strains Display Diagnosis
Ckt mounted Posistance
Coils =

25

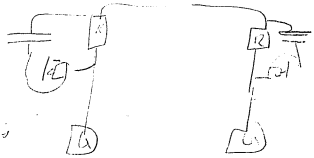

Domestic Telegraph Co
Gold & Stock Telegraph Co
Call





No 1

Trying a Current
with a Duplex Relay
and Battery at



Trying this

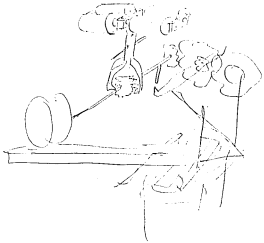
Telegraph.

Known that I, _____
Etc =

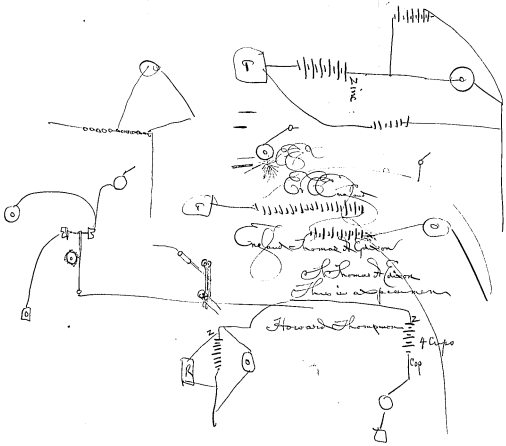
The object of this invention is to transmit automatically to a distant station, or echoing station different signals, characters etc ~~in such a manner that~~ ~~and arranging the electric current in such a manner that~~

The machine is provided with a number of keys arranged in such a manner that the depression of any one of them places a contact spring upon a piece of paper placed on a drum ~~the~~ paper being provided with ~~per~~ holes of different length through which contact is made, and by rule adjusting the clock work by another key, the signal is automatically given upon the line and recorded at the distant station, The main object of the invention being to provide a cheap simple and reliable telegraph machine requiring no intelligence to give the signals

26



21-13



OFFICES.

New-York:
66 BROADWAY.

Philadelphia:
310 CHESTNUT STREET.

Washington, D. C.:
1409 PENNSYLVANIA AVE.

THE AUTOMATIC TELEGRAPH COMPANY
No. ..
WILL PLEASE SEND
THE FOLLOWING
FROM WASHINGTON, D. C.

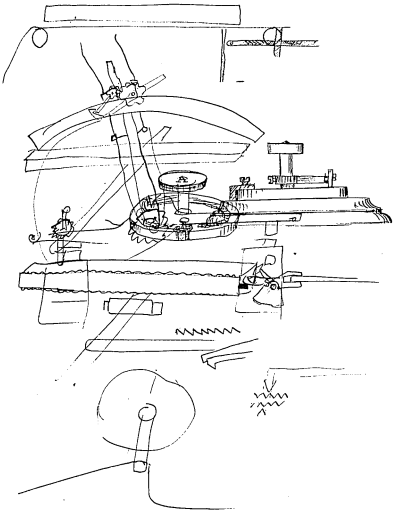
Geo. Harrington,
PRESIDENT.

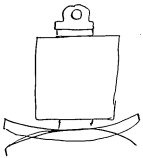
J. C. Reiff,
TREASURER.

To 187

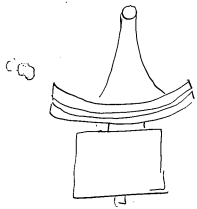
drop of mercury placed in the little
to which will gravitate the
pellicum & seldom apply gentle heat
Thus will not cost for distilling
- it greatly increases the pecuniary
profit.

27

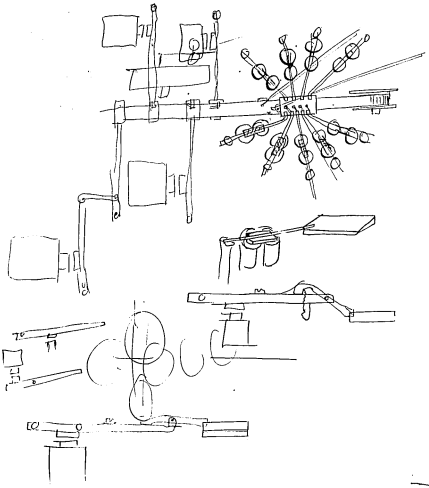




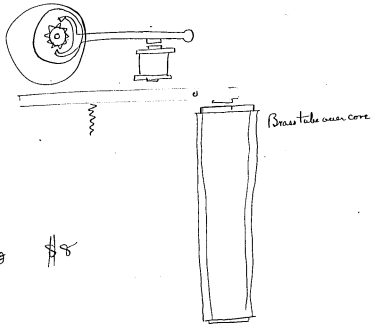
Try this Experiment
See if Sweet draws to
the center -

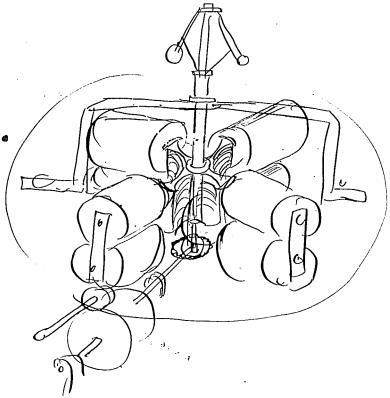


Write to Robert Hemingway Covington Ky
if he is a mfr of glass marbles, & could he make
some small ones



p. - 28



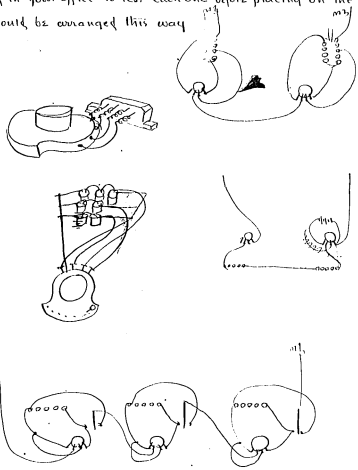


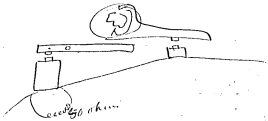
28

(2) - 38

Bentley.

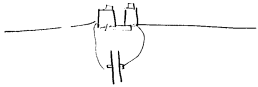
When you receive "Universal Privates" you had better have a local battery arranged in your office to test each one before placing on the line, the batteries should be arranged this way

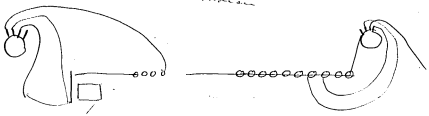


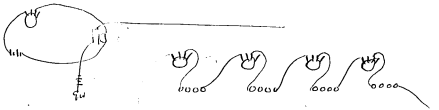


Principle for a pressure sensitive switch using underwater transducer
Makes recognition not slow

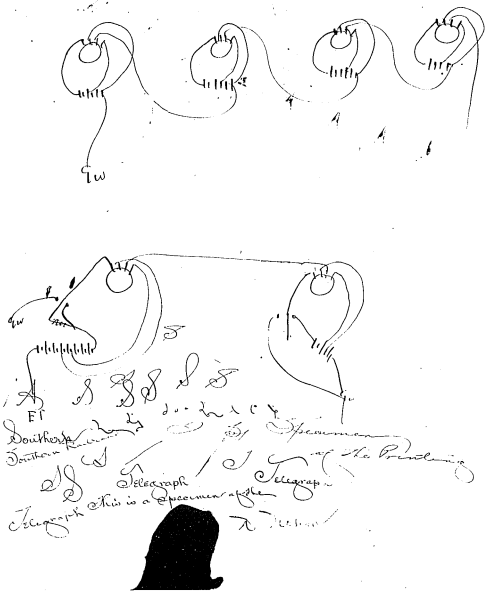
to write quick

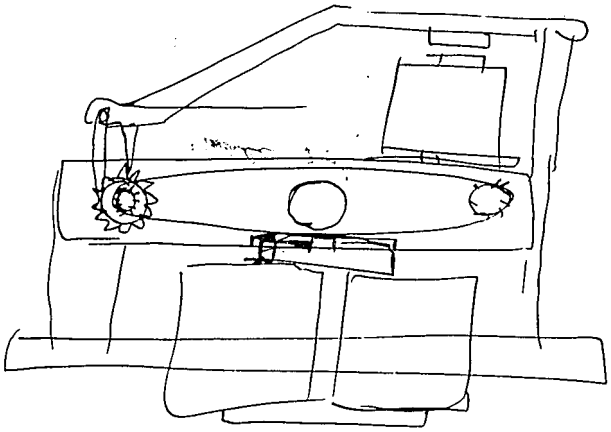


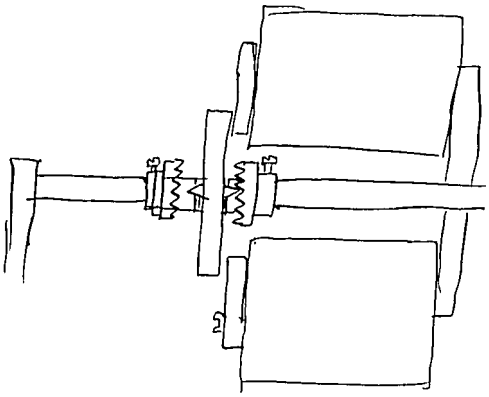




29-31

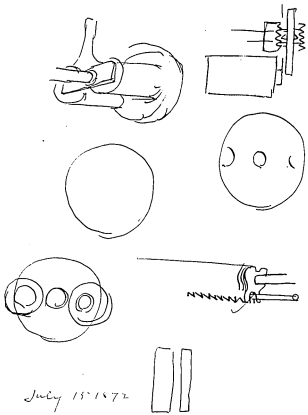

Southern
Telegraph
Telegraph this is a Specimen of the





Sept 10 1872

28-(5)


July 15 1872
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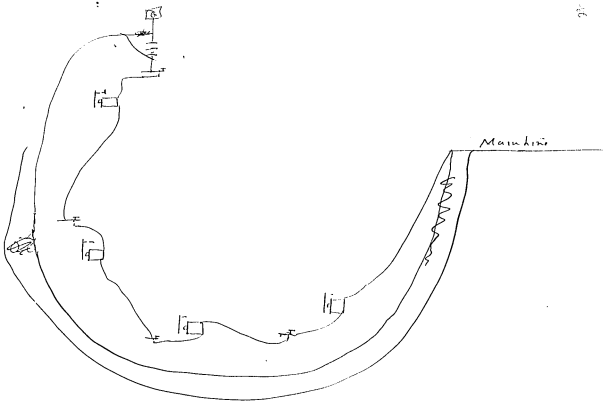
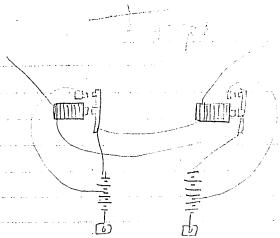




29-(2)

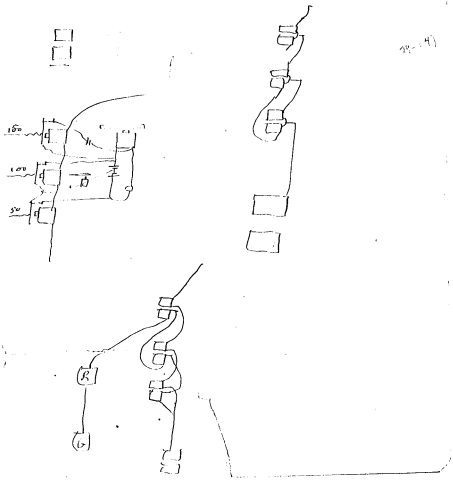
The Gold and Stock Telegraph Co.,

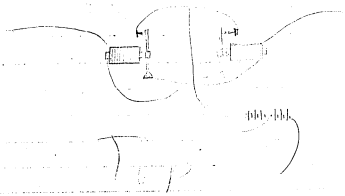
Executive Offices,

No. 61 Broadway, New York.

MARSHALL LEFFERTS, President.
JOSEPH M. COOK, Vice-Pres't.
NORMAN C. MILLER, Sec'y & Treas'r.
GEO. B. SCOTT, Sup't.

New York, ...187





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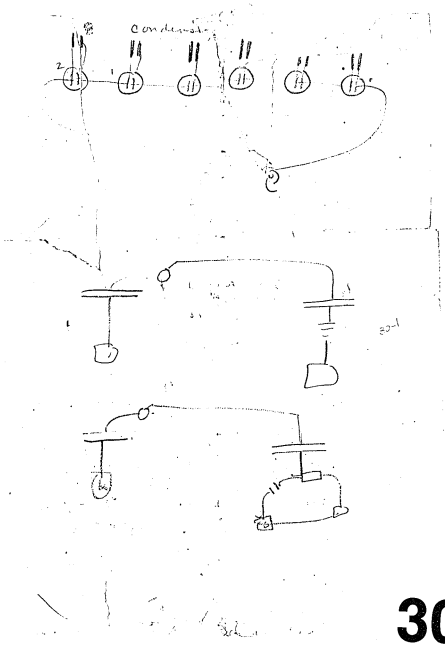
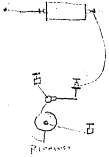
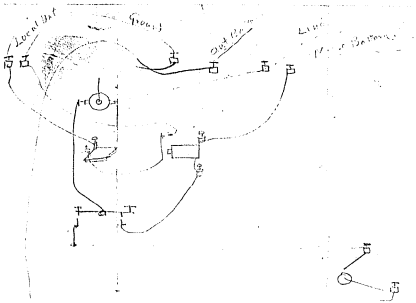

condensator
2
1
coil





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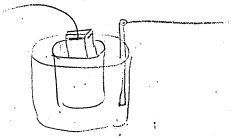

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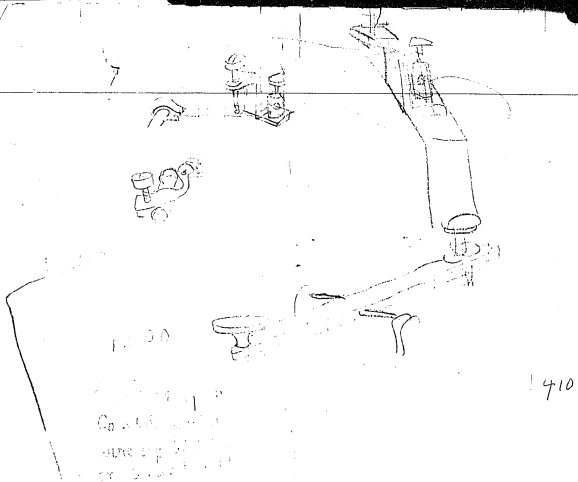
(30-47)



11 parts of water 1 sul
acid - Resistance 1,000,000
greater than Copper

~~Keep the~~

Try a steam power of
Tod pop v. a cold pipe
Sec. inlet
Pumping Rate

The Gold and Stock Telegraph Co.,

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No. 61 Broadway, New York.

MARSHALL LEFFERTS, President.
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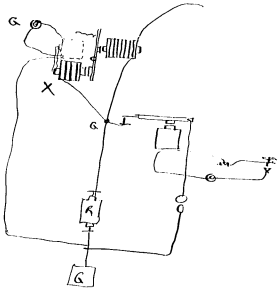
GEO. B. SCOTT, Sup't.

New York, ... 187

Munn & Co.

Please mention in case no. 1. a slight alteration thus.

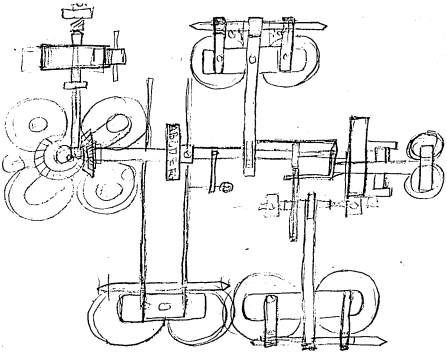


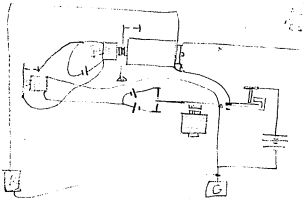
Also mention that an extra front point may be used instead of back point and when the main circuit was closed the local magnet would be cut off also that

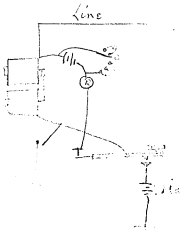
The compensating magnet X. is split a local current constantly circulating in one helix. The other coil is inserted into an artificial line. the circuit of (3) which is opposed to the local G. —

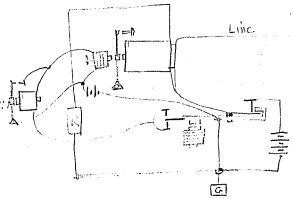
30

30

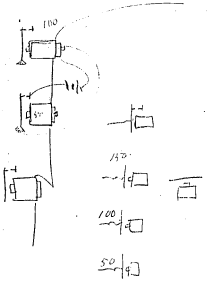




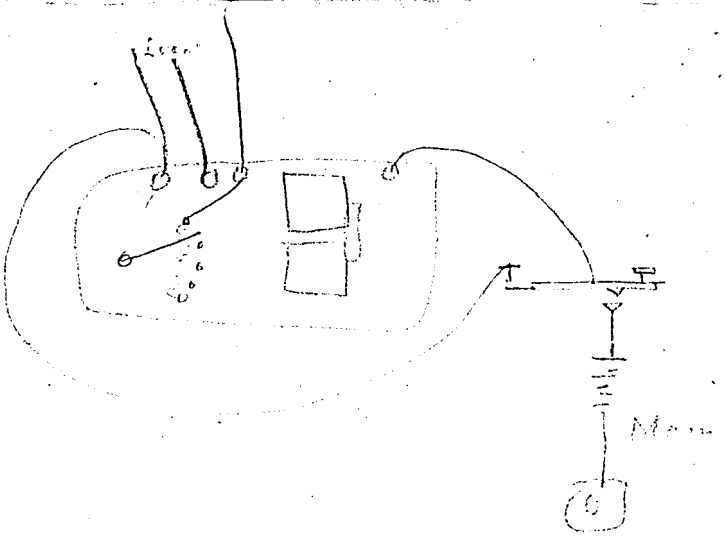

Line



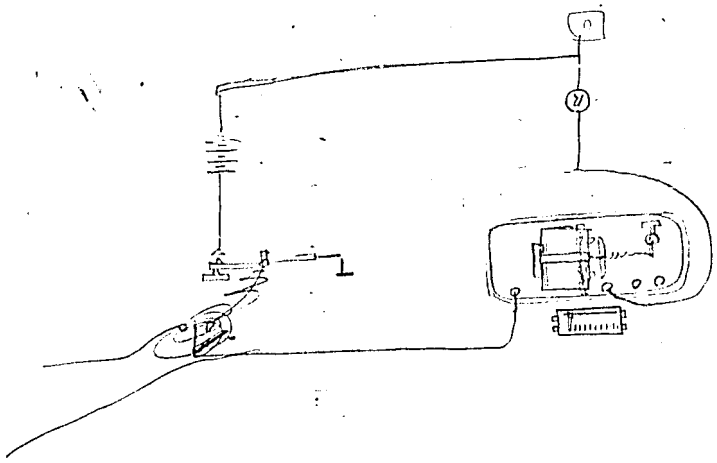
heavy westerly winds that prevailed during
the winter would have produced the westerly set & repeated at
daylight to hover had the land east of [illegible]



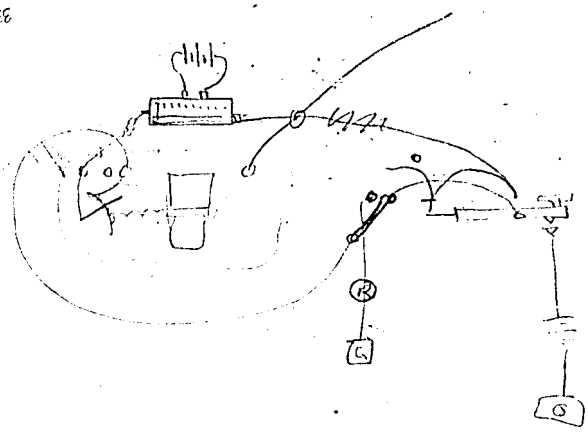
33-(1)

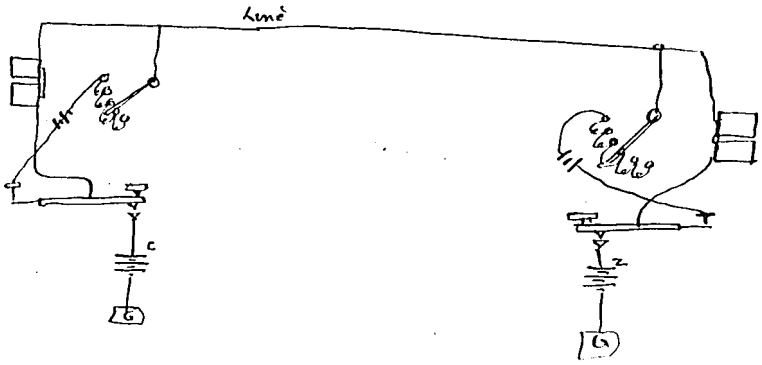


33-(2)



33-(3)

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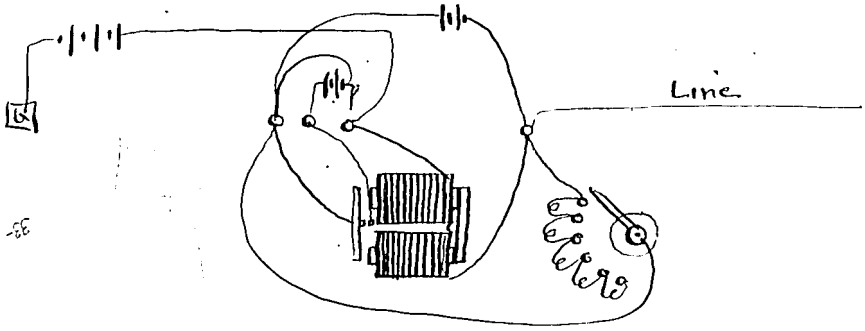
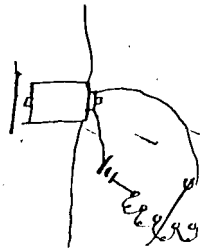
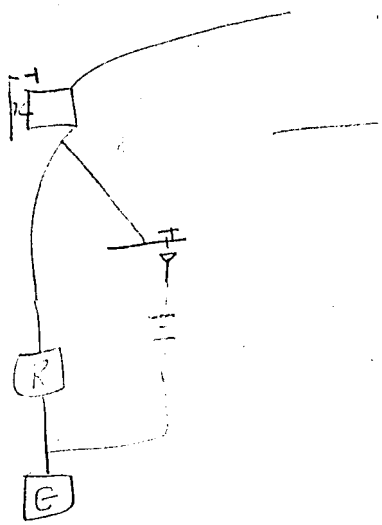

Line



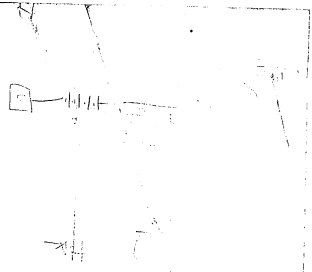
It may be done in a great number of ways. The only objection this plan has is that it will require a considerable Compensating battery at times when the Escape is strong, but I consider this better than an Extra Coil which will increase the discharge from the Relay while this made entirely present, the discharge Current going on the line ~~[illegible]~~ ~~[illegible]~~

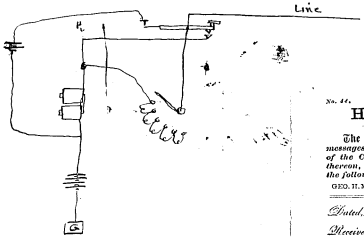
34-3)



34-4)

(5) -12





No. 11.

HALF RATE MESSAGES.

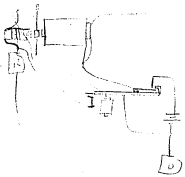
The Western Union Telegraph Company *require that all messages received for transmission shall be written on the blanks of the Company, under and subject to the conditions printed thereon, which conditions have been agreed to by the sender of the following* **HALF RATE MESSAGE**

GEO. H. HUMFORD, Sec'y. WILLIAM ORTON, Pres't.

Dated.....1872.

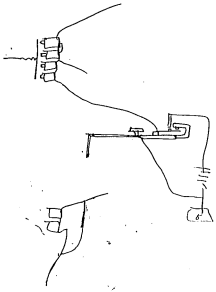
Received at **145 Broadway,**

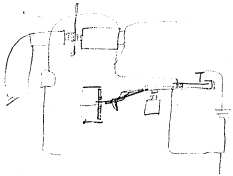
To.....

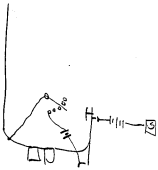


34

34-(12)



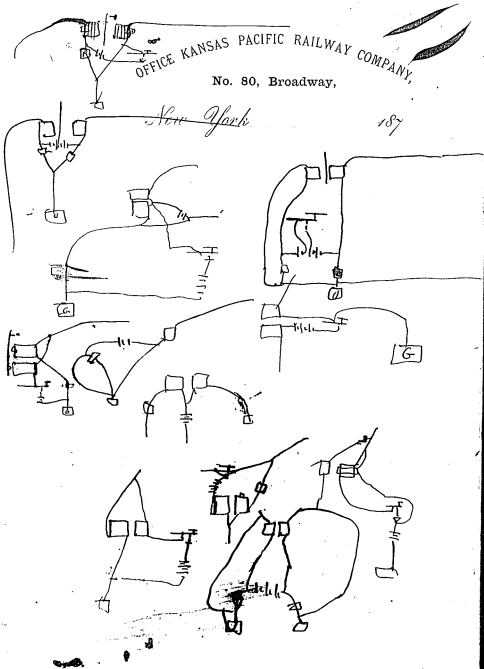




OFFICE KANSAS PACIFIC RAILWAY COMPANY,

No. 80, Broadway,

New York 187



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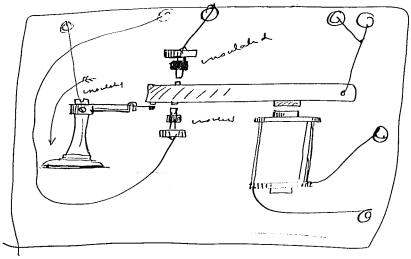
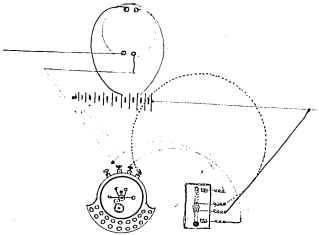


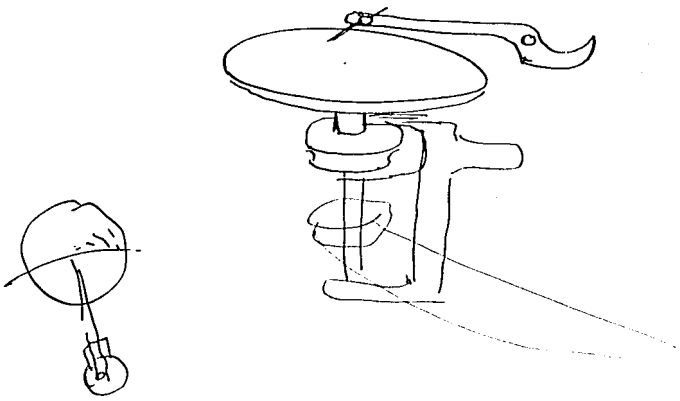


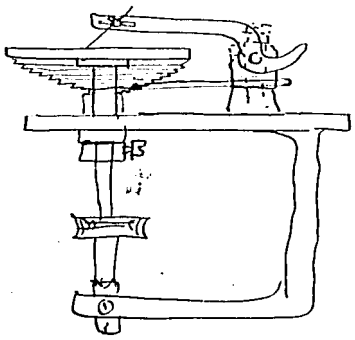
July 15 1872

35

Drawings
Thau & Co

35





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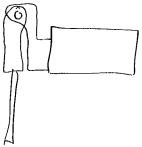

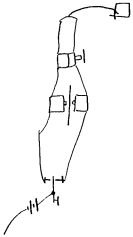

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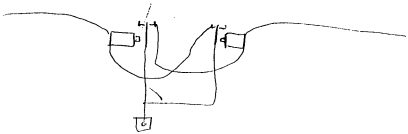

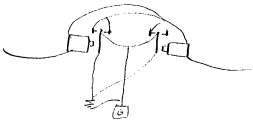

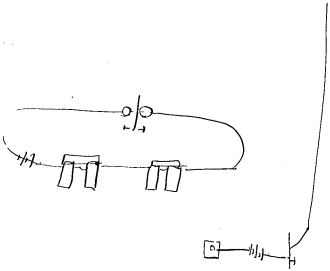

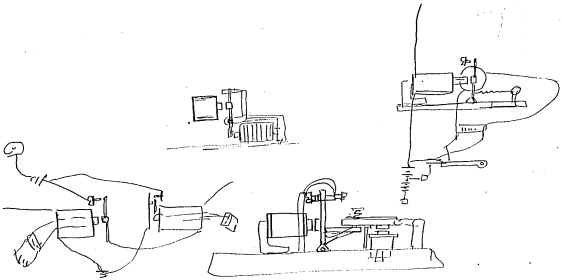

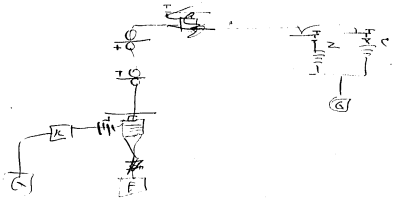

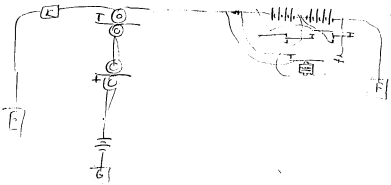

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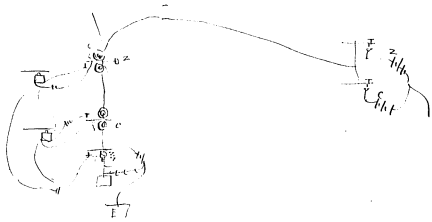
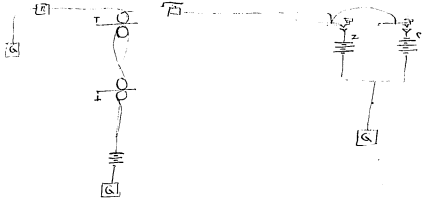
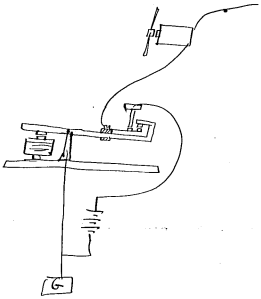
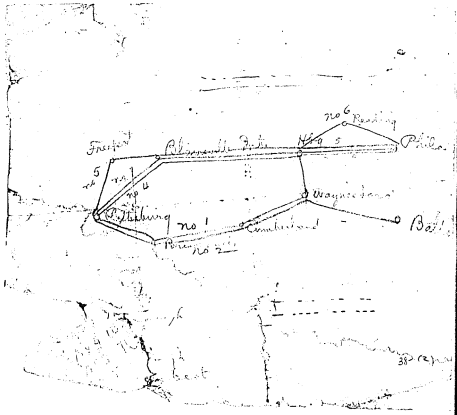
37

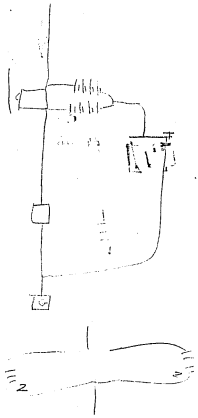


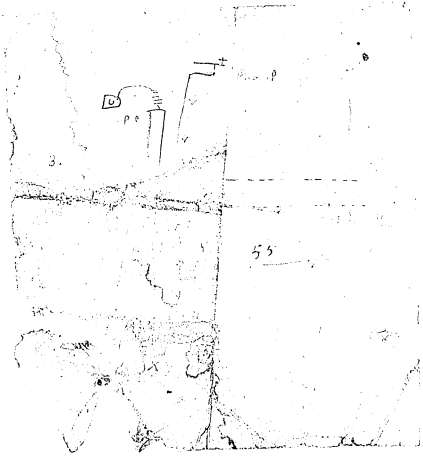


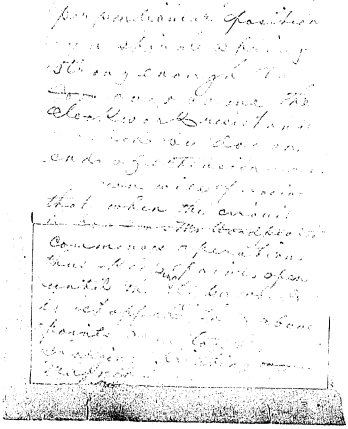



no 6
Reading
Phila.
Pittsburg
no 1
Cumberland
Wagner Junc
Balt.
no 2

38







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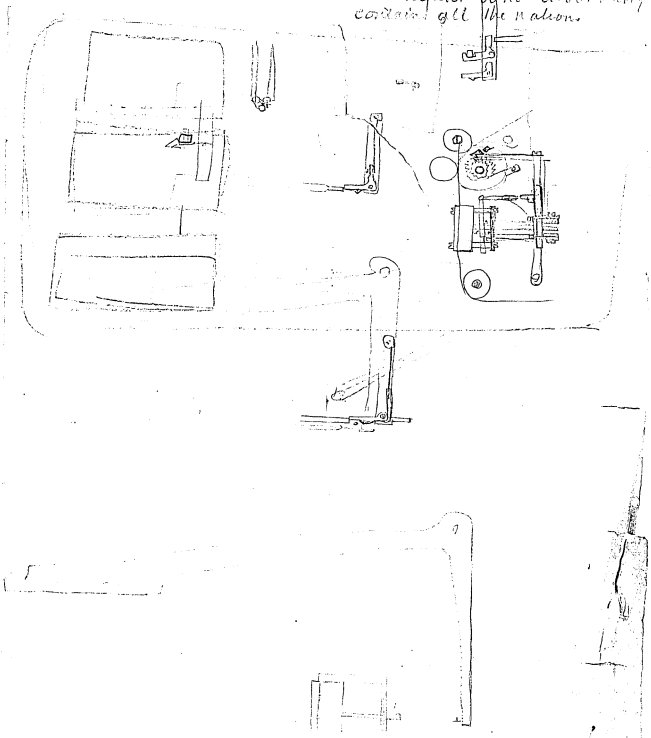
38-(4)

All these Complex axioms
Social paradoxes etc
Can all be explained by the
investigator who laboratory
contains all the nations.



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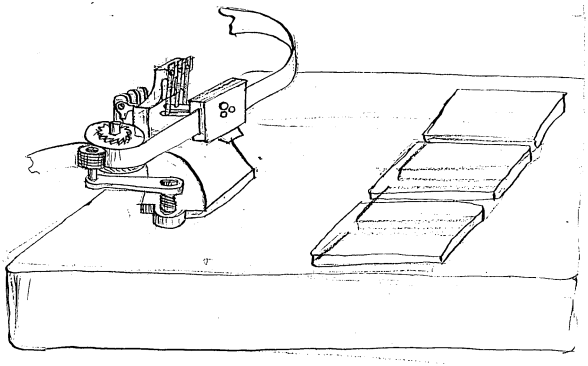

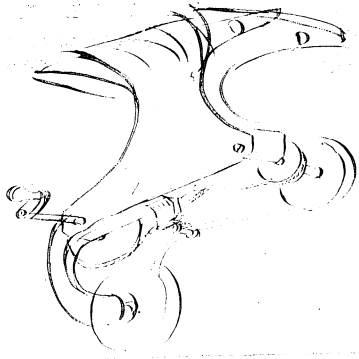

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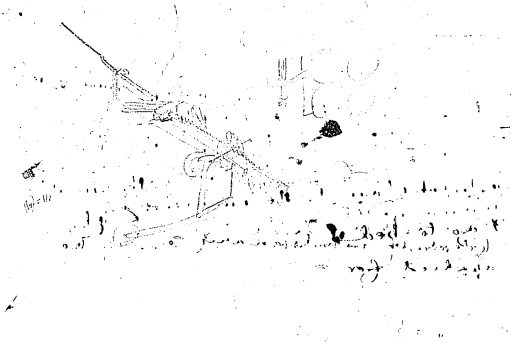


OFFICE OF

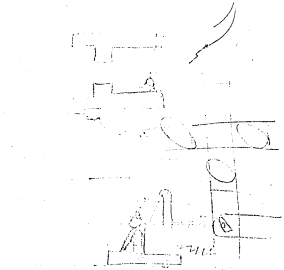
Newark Telegraph Works,

No. 15 RAILROAD AVENUE.

Opposite Market Street Depot.

WILLIAM UNGER,
T. A. EDISON.

Newark, N. J. 187



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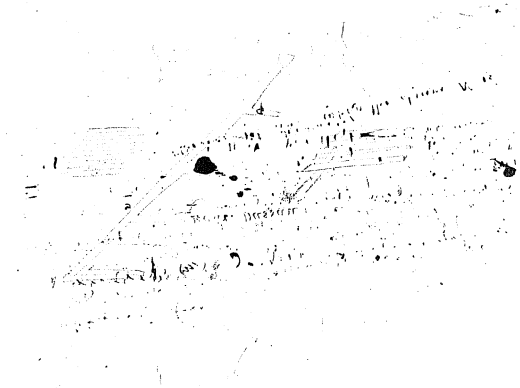
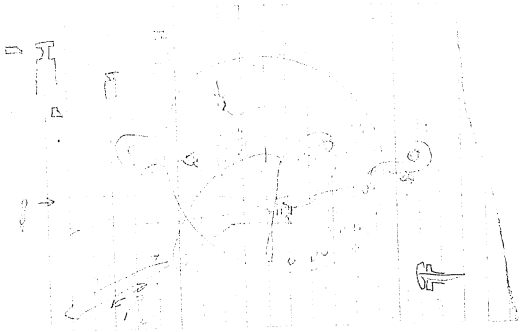




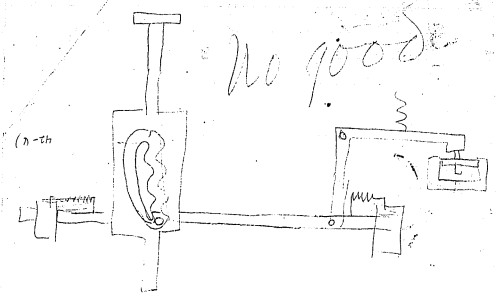
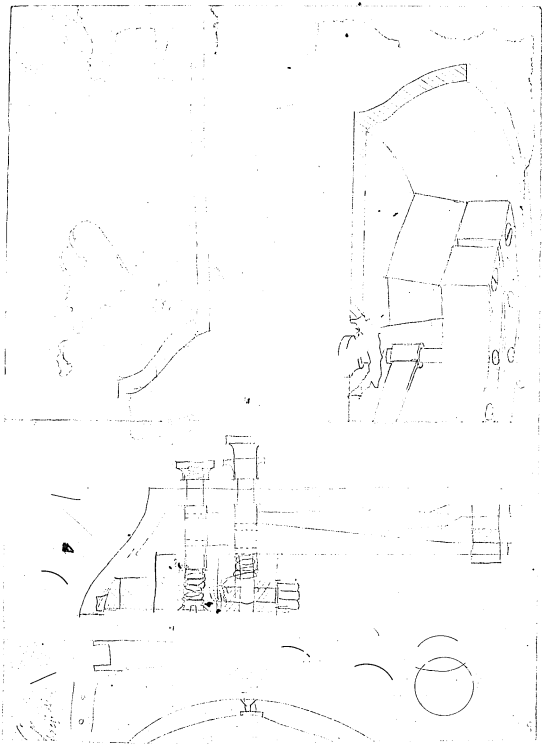
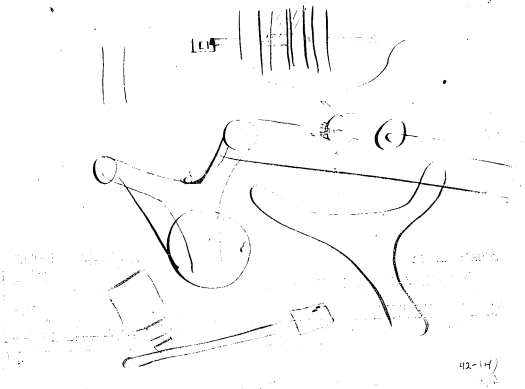


Fig 4

42

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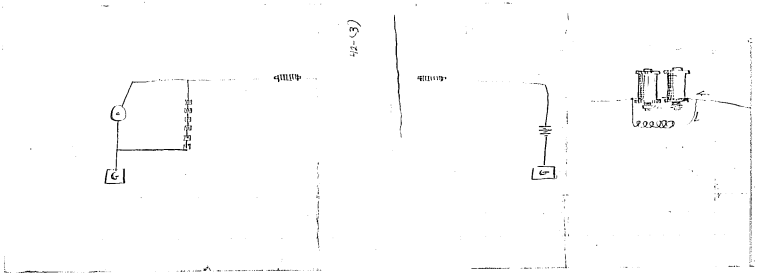
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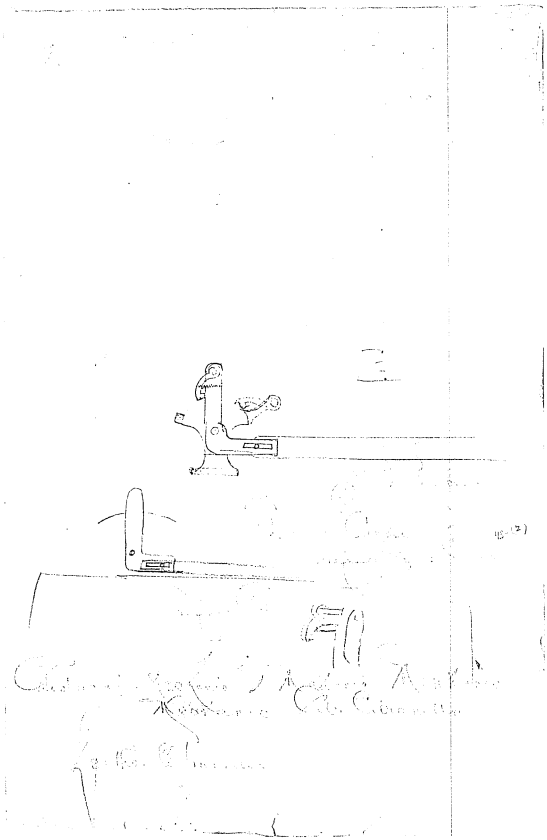
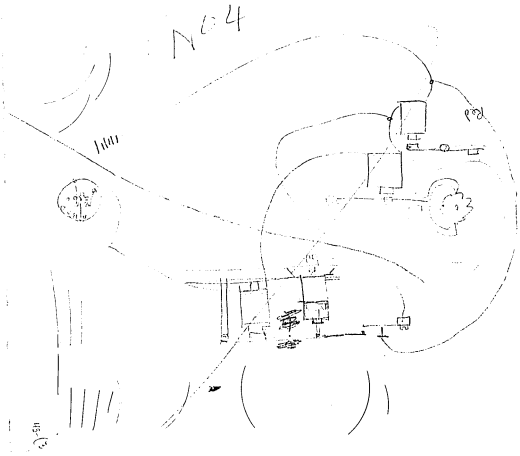


[illegible] the sketch diagram attached to the [illegible]



U. S. Patent Office,

OFFICIAL BUSINESS.

Chief Clerk.

WASHINGTON D.C. JAN 30 5 FREE

F. Scott Esq
Care of American Telegraph Works
113 Sussex R.R. Avenue
Newark N.J.

43-(1)

Nov

Mr Edison

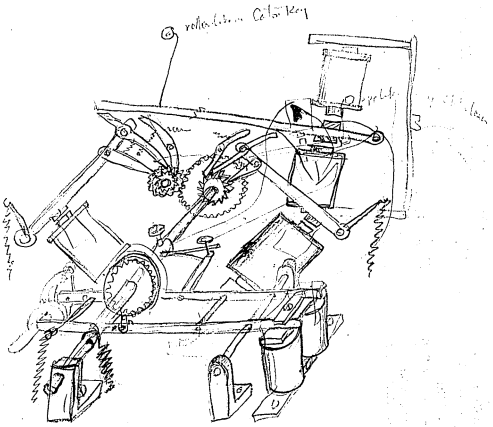
We have been strong
get a satisfactory Bank
& Receiving Instrument which
may be adapted for general
use. that will not beg.
Constant adjustment or
little liability to get out of
order — without success.

Another point. In
where the speed is
judgement of the operator
the estimates vary and
number of operators a
an immense amount of
make an attachment of
possible by which the
operator can obey instructions
with some degree of accuracy

Respy
Geo Prescott

43-(2)

43



44

OFFICES.

New-York:
66 BROADWAY.

Philadelphia:
310 CHESTNUT STREET.

Washington, D. C.:
1409 PENNSYLVANIA AVE.

THE AUTOMATIC TELEGRAPH COMPANY

No. .....

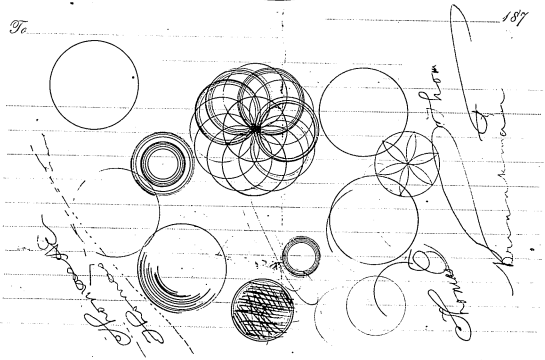
WILL PLEASE SEND
THE FOLLOWING

FROM WASHINGTON, D. C.

Geo. Harrington,
PRESIDENT.

J. C. Reiff,
TREASURER.

To 187



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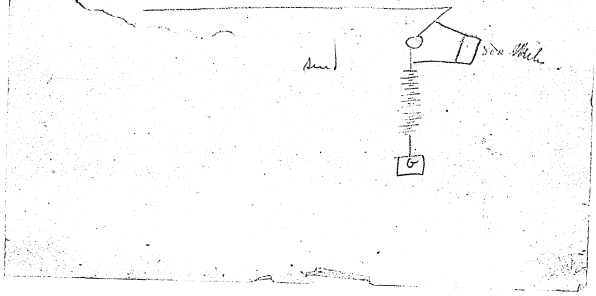

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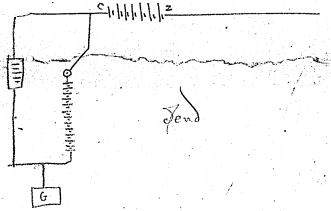

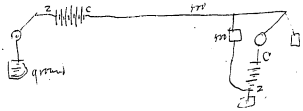
k
m'
m
C

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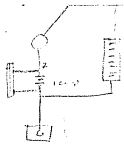

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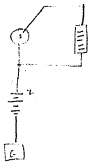

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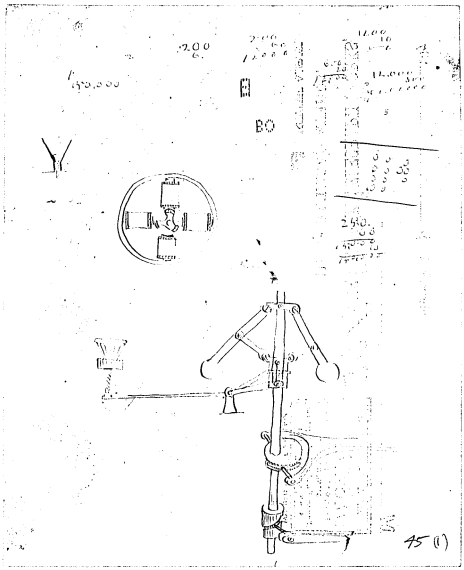


45

No 1

To all whom it may concern

Be it known that I Thomas A. Edison of Newark in the County of Essex and State of New Jersey having invented an improvement in means for Transmitting Power for Telegraphing and I do hereby declare the following to be a full and clear description of the same so far as perfected

Apparatus & devices for perforating paper for Telegraphs

The object of this invention is to effect by simple mechanism the perforation of paper by dots or dots & dashes for Telegraphs

Fig 1 represents a plan of the perforation arranged more especially to show its operation P, P, P, P, are bars of steel having their ends hardened so as to enter the die Plate, D, and perforate or punch holes through the paper which passes between the guide Plate, G, and the die plate, D, these punch bars are arranged in such a manner that they will punch holes in the paper in two lines one above the other, 5, bars being on top and, 4, bars being placed beneath but exactly opposite the spaces between the top bars after these bars entered the die and perforated the paper or as many of them as is necessary to form a letter they may be withdrawn by means of springs attached to the end of each bar at, H, or may be brought back by a cam or combined with with the springs and operated by the downward movement of the key (see fig 15) the latter is preferable as the tension of the springs are dispensed with and the device is made positive I do not wish to confine myself to any particular device for bringing the punches back as it may be done by compressed air ~~with~~ weight etc. K' K' K' K' K are keys having upon their top end an I shaped cam and upon their lower end a slot cam within which works pins attached to the paper driving bar I' upon this punch bars are pins from the punch bars arranged so that when a key is depressed one of the bars P

45 (2)

45

will be carried forward by the shaped cam wock will carry as many of the upper & lower bars as their are pins from them for illustration the bar, B, B, has a pin from the bar, a from the one under neth it from C', C^2, C'', C''' now when the bar B B' carried forward it takes these punch bars with it leaving the others to remain in their position then the letter B is made thus

if now the bar B B is carried forward the letter L is made thus

and so on through the whole alphabet the keys $K' K^2 K^3 K^4$ when in their nominal driving position are high enough to take the pins upon the bar E out of all the cam slots upon the keys and this bar is free to move forward when any key is depressed as the pin under such key enters the slots & the rod is thrown forward at different distances according to the pitch of the cam if a long letter having a great number of dots or dashes is to be made the slot has such a pitch as will feed that length of paper

Fig 2 shows how the pins are arranged upon the punch bars

Fig 3 shows a Key K^4 with the upper cam arranged to move the arm G and two punch bars f & f' when the key is depressed the arm G is thrown forward by the cam K^5 but when it revolves

The top of the cam the springs X X' pull the punch bars back and the bar at the same time. the bar is then between the key and the cam projection (R) inside the cam and the key is free to move up the bar G - passing down the inside of the cam and spring forward when the key is up by the spring S' ready to be thrown forward again by the depression of the key I do not wish to confine my self to a cam that has any particular shape or form of cam for it can be done by levers

Fig 4 represents a number of keys arranged with the punches and paper driving shaft

Fig 5 shows the manner in which two rows of keys could be arranged instead of one row which is desirable on account of compaction

it is not necessary that each particular key should have a slot cam upon its lower end which by its downward motion allows the pin to enter the slot and give a forward movement to the shaft as the paper driving shaft may be of flat steel and 26 slots milled or cut on one side of it thus

and the pins placed upon the keys instead of being placed upon the shaft when constructed in this form it is much more reliable + cheaper in construction when two rows of keys are used ~~+ ...~~

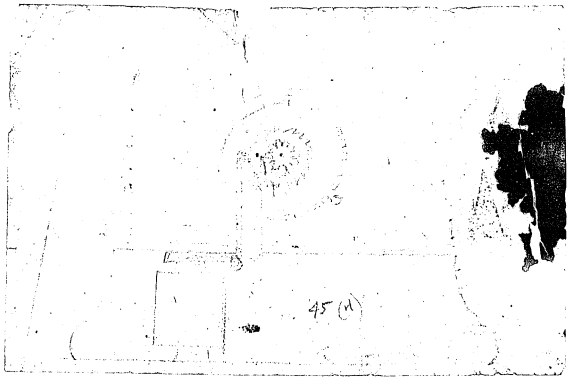
there is employed two pieces of steel

fastened together and cams milled in each bar on opposite sides one peculiarity about this slot cam motion for drawing the paper bar is that when the keys are not operated upon in either the former or latter plan the paper drawing bar is unlocked (R) free to move forward But when a key is depressed the pin enters G slot locks I and gives it a forward & back motion which is a positive movement very necessary in punching Telegraph characters which can only be read when they are accurately spaced

Fig 6 Represents the paper drawing device. q is a gear wheel connected to work the gear wheel, S.

N is a ratchet or fine milled wheel connected to the gear wheel G and shaft C R', R are hard vulcanit rubber rollers running upon the steel wheels X, X, wich are milled or roughened the paper passes between the rubber rollers R R' and the wheels X X' Shaft carrying q the rubber is held down tightly upon the paper by means of a spring L is bar with a slot at one end pivoted loosely upon the shaft G. near the middle is a dog D held held in the path of the ratchet wheel N by the spring A — K is a stop screw to lock the dog D. and ratchet wheel N. at that point and prevent the momentum of the Gear wheels etc from carrying it a greater distance

C is a click to prevent the wheel from comming back upon the end of the driving shaft ~~of~~ any lever from that shaft is a pin working in a slot upon the bar I. and gives motion to this bar when at rest the dog D is locked with the ratchet wheel N & stop screw K



45

Caveat.

The object of this invention is preventing ~~a number of~~ printing instruments on the same circuit, or circuits from working & printing except the desired machine. (as) to verify.

This invention consists in an attachment to one of my Printing machines already patented. This attachment is merely transferring the lock wheel from revolving as in a little recess the letter wheel and depressing with the N. press and printing a straight press instead. The printing lever is provided with a pin having a V notch cut in the top of its so that when the type wheel is shifted to the left the straight pin passes through the slots in the lock wheel, and thus lock wheel is thrown directly over the pin on the printing lever so that the lock wheel ~~cannot~~ prevents the printing lever from moving as long as it remains shifted to the left and as there is only one position where it can get back and forward it follows that if these positions are now brought together to shift that the printing will take place. Now if there were 30 machines in circuit, each provided with the lock wheel in this position but with the shifting device set in different positions on every machine, and no shifting could take place except by bringing the desired machine in correct position for shifting the type wheel circuit & then the printing lever, it follows that

Every machine would shift to the left and the Printing Levers remain locked, except the desired Machine which would shift to the left and thus bring the letter wheel over the page and there kept there as long as desired.

I mention here that no shifting can take place except the Type wheel is out of alignment with the Pg &c. This never taking place but for printing, but only when a particular Machine is to be brought into action. Thus when a type wheel is being used no other can act shifted to the right by the action of the printing lever except by mechanically placing the circuits at rest but this can be obviated in the transmitter.

~~I will also mention here that~~ I do not ~~see~~ ~~at~~ I have enough said in the Printing Lever that is locked to through off the Unison. I do not wish to confine myself to any particular device but claim locking the printing lever by mechanism operated by that lever and controlled by the Type wheel or vice versa.

I will mention here that there are several modes of performing this same operation, one of which is to have a separate magnet working a ratchet wheel which ratchet will have a

My claims will probably be

First. The formation of Morse dots and dashes by perforating up two lines ~~x & M~~ for purpose set forth

2nd The combination die or dies and punches arranged in ~~the manner described~~ two or more lines, ~~and operated~~

3d The combination of the punch bars C' C² C³ C'' Fig 1 with ~~the~~ bars as B' B' BB & BB'. and key or keys K' K² K³ ~~& operated~~ or their equivalents ~~for the purpose set forth~~

The paper drawing bar or its equivalent as E operated as described for purpose set forth. (Fig 1)

4th

5th The device C. E. F. X or its equivalent for drawing the punch bars out of the punches for the purpose set forth –

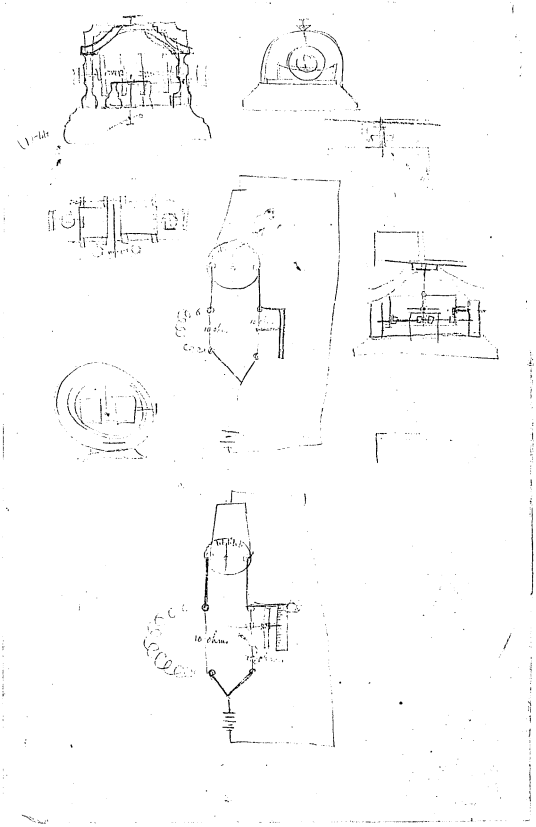
6th ~~The bars B~~ springs as n n n or their equivalents in Combination with ~~the~~ bars as B B' BB ~~etc~~ for the purpose set forth =

46-2

7th The Combination of the punches having their Cutting Edges made as described with the other mechanism for the purpose set forth figs 46 47 48 & 49

8th The Combination of the Embossing plate fig 40 & bars with ~~the~~ bars as B B' BB etc K44 (Fig 1) for the purpose set forth

46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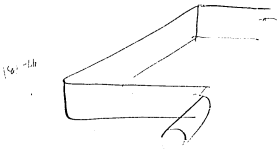
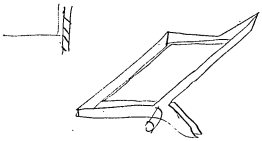
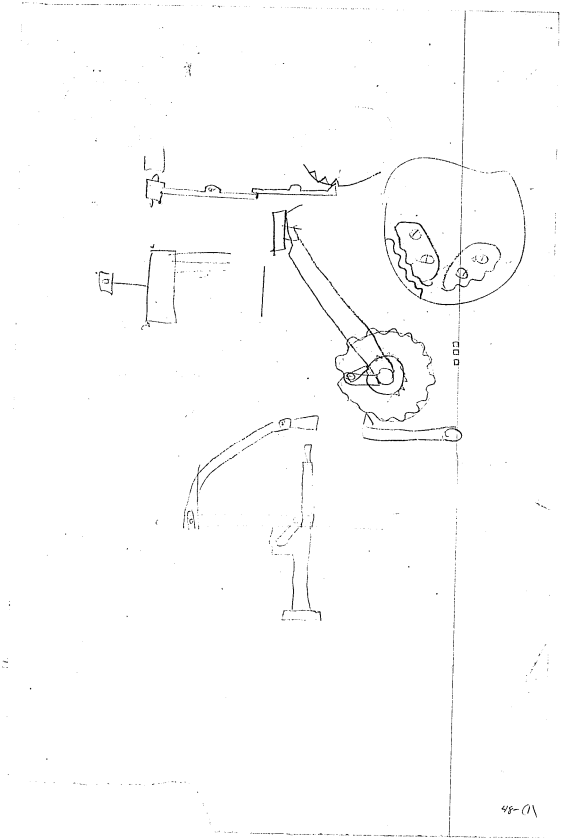
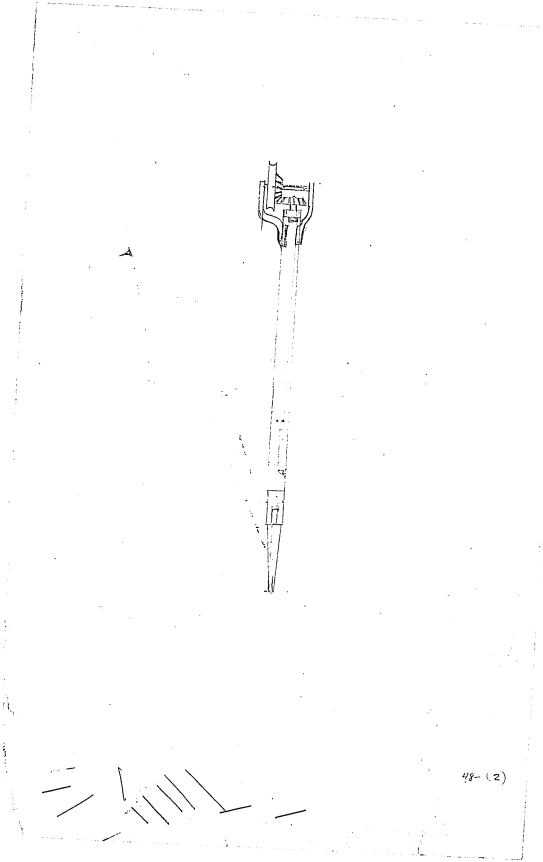





48-01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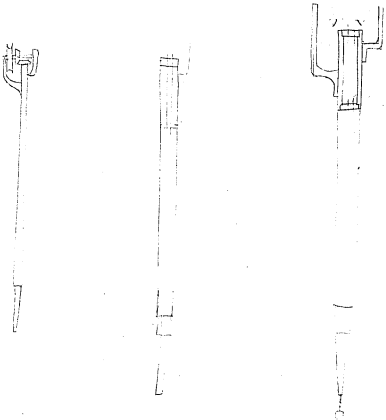

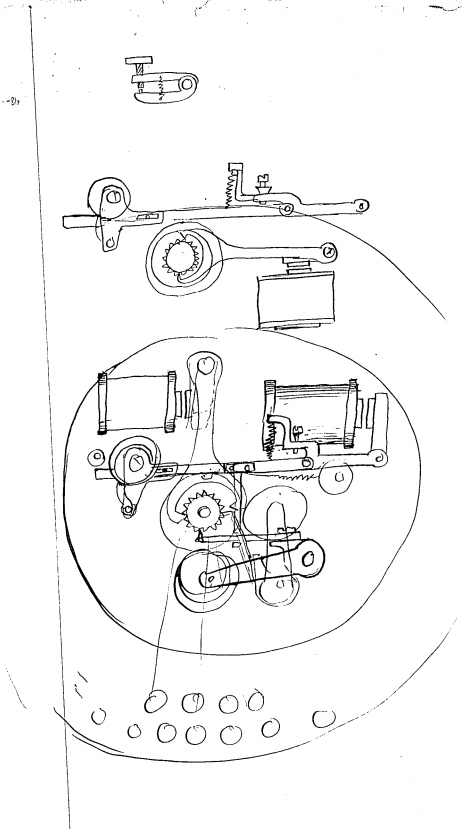

ABCDEFGHIJKLMNOPQRSTUVWXYZ

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Newark, N. J. 187

M .....

ELECTRO-MAGNETIC
And Magneto-Electric
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GALVANOMETERS,
Rheostats, Batteries Chemical Apparatus,
AND TELEGRAPH SUPPLIES.

WM. UNGER. T. A. EDISON.

Bot. of THE NEWARK TELEGRAPH WORKS,

No. 15 RAILROAD AVENUE,

NEWARK.

48

Escapements owned or controlled by Gold & Stock Telegraph Company. Patented and to be Patented –

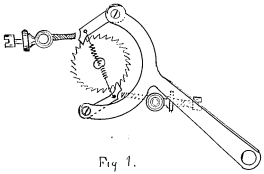

Fig 1.

Fig 1 Represents the Escapement upon the Boston Instrument. Not shown or described in the drawings or specifications. It is Patented in Pope & Edisons Patent upon working upon one cam by rapid vibrations and a Polarized Printing Magnet. but in an opposite form the clicks pulling and are formed thus

Fig 2

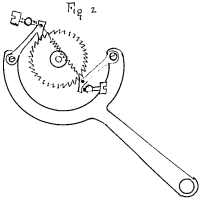

Fig 4 will cover both escapements. there are a great many modifications founded upon the exterior lock principle all of which according to patent law are patentable among the modifications is that represented by fig 3 – – – –

48

(1)-55 OFFICE OF THE
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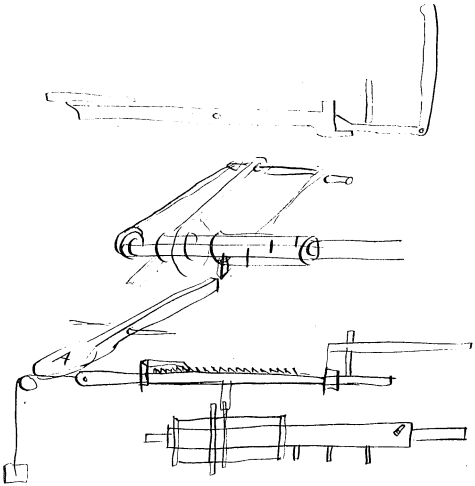
NEWARK, N. J.

Newark, N. J., ... 187



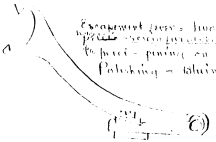
52

(2) -15

Piece work schedule.

[illegible] - pin, ratchet, shift plate polished -

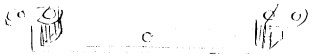
10 per day. each 40¢



Escapement pivot - hub [illegible]
[illegible] - [illegible] - a [illegible]
To pivot - pivot on [illegible] [illegible] [illegible]
Polishing - [illegible] [illegible]

10 per day. 65¢

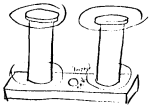
Drilling. Milling. -



20 per day. each. 5¢

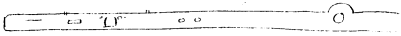
Turning. Drilling. pulling. [illegible] spring on - rubber beads
[illegible] - Jewelling. -

10 per day -



45¢

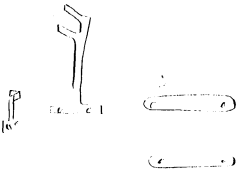
52



10 pr day. 40 c

10 pr day 40 c

Total
40
40
40
15
40
175.



10 pr day 40 c

assembling paper lever & gauging: soldering on shaft = 15 c

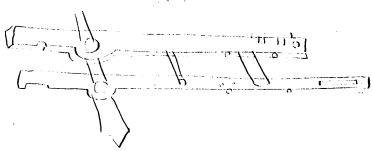
10 pr day - 52-(3)

10 per day 2 pens for paper &

Brooks

Spiral.

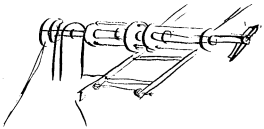
52

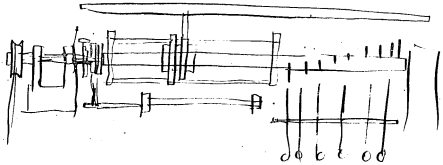


52

OFFICE OF THE
AMERICAN TELEGRAPH WORKS.
No. 103 NEW JERSEY RAILROAD AVE.,
NEWARK, N. J.

Newark, N. J. July 12 1871





53

53

115.00	649.00
558.00	656.88
1443.00	140.00
42.00	300.00
25.00	646.58
170.01	85.00
[illegible]	42.00
54.55	741.00
101.10	40.00
13.33	195.32
807.50	80.00
140.00	72.00
297.00	200.00
117.00	129.18
61.88	425.00
26.00	80.00
150.00	81.49
1.05	5330.13
577.50	
354.00	
650.00	500.00
688.[illegible]	110.00
52.55	1[illegible]
55.50	60.00
[illegible]	375.00
[illegible]	33.55
950.00	80.00
357.87	150.00
25.08	780.00
45.00	224.99
80.00	8[illegible].00
43.86	550.00
1750.20	63.34
46.[illegible]	700.00
20.50	80.00
150.00	[illegible]
200.00	225.00
21.62	15.00
162.00	5.00
370.00	50.00
46.10	1.00
77.11	4952.92
87.63	
8045.05	

Gas [illegible]

Quick Office Drawer No.

Gas 1896

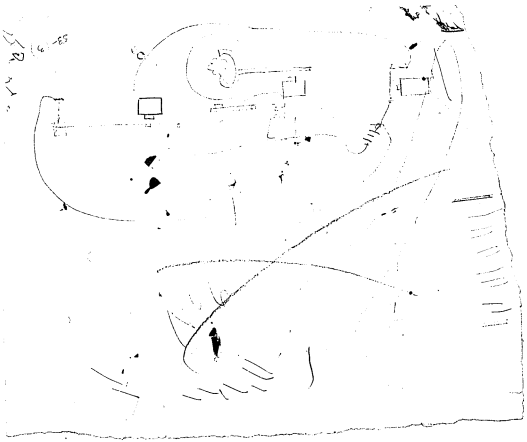
Gas 1896

8045.05	
4952.92	
5330.13	
18298.10	

7201696
8623
9312

Paid

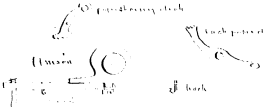
53



5 Sheers. arms - shaft for cut roller and stem - cut roller
cloth on side - patent 10 per day 50c

Total

50c
65
10
100
50
65
370



10 per day. 65;

Planing frames per 10c

Filing edges frames, sides, polishing, putting on steady pins
10 pairs $.100.

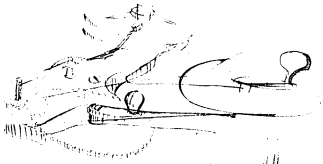
Drilling & tapping 10 pairs frames 30c

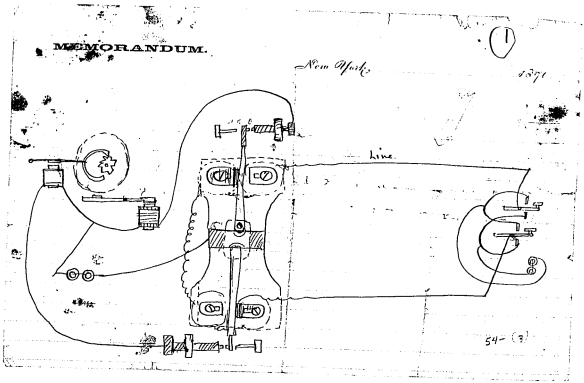
65c

54-(1)

54

(2) -18





54

BLANK No. 1.

OFFICE:
Philadelphia,
312 Chestnut St.

RECEIVED AT THE OFFICE OF
No. _____
M. _____
66 BROADWAY,
NEW YORK.
The Automatic Telegraph Co.

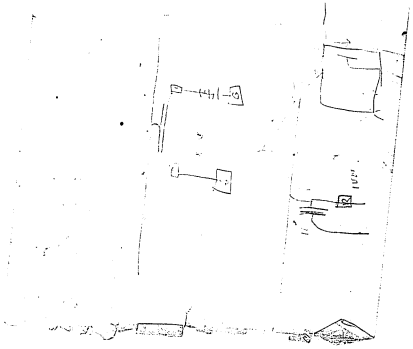
OFFICE:
Washington, D. C.
1420 Penna. Av.

J. C. REIFF, Sec. & Treas.,
NEW YORK.

GEO. HARRINGTON, Pres.,
NEW YORK.

Dated, _____

To _____ 187



54

BLANK No. 1.

OFFICE:
Philadelphia,
316 Chestnut St.

J. C. REIFF, Sec. & Treas.,
NEW YORK.

RECEIVED AT THE OFFICE OF
No. ____
M. ____
66 BROADWAY,
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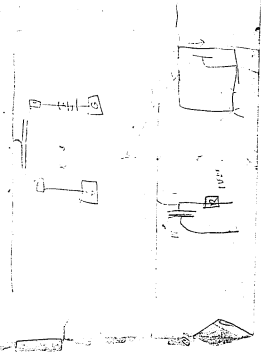
The Automatic Telegraph Co.

OFFICE:
Washington, D. C.
1420 Penn. Av.

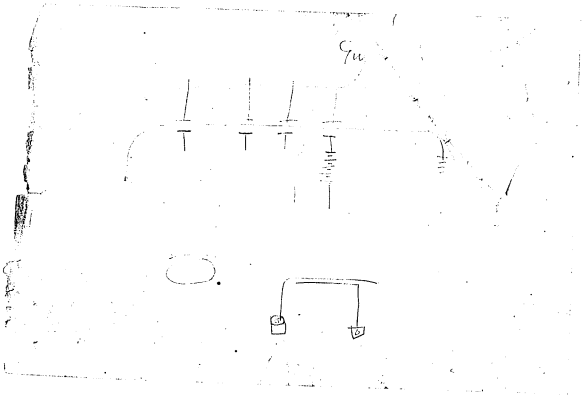
GEO. HARRINGTON, Pres.,
NEW YORK.

Dated, ____ 187

To ____



55



Turning out Type wheels. 50 c

Filing Type wheels. 50

Polishing Type wheels 25

50
50
25
40
75
40
2.15 c

40 c

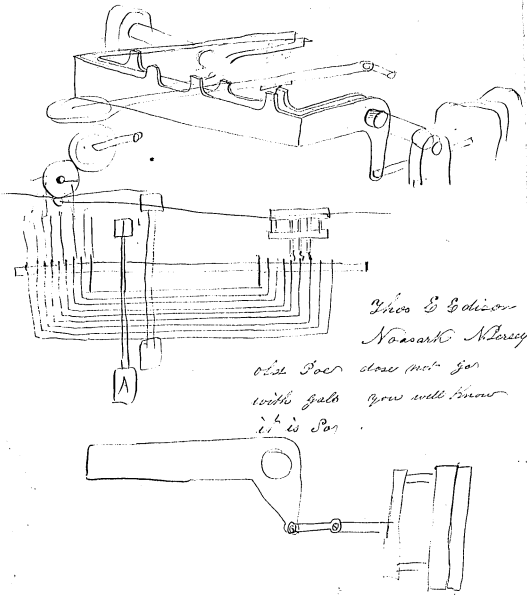
75 c

40 c

55 (2)

55

(6)-55



Thos E Edison
Menlo Park N Jersey
Oct 1st 1880 close not go
with Galv grow well Brown
it is So

(1) -95

Fig 1

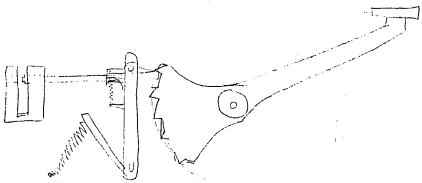
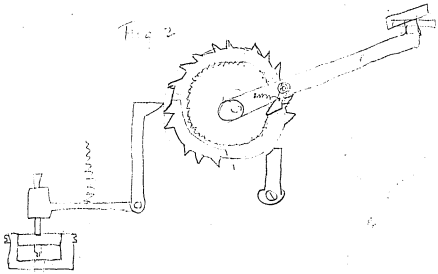
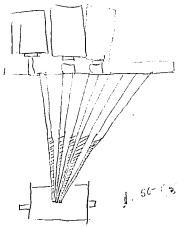


Fig 2



p. 56

56



R

4331

Sec

1/4 = 154.6444

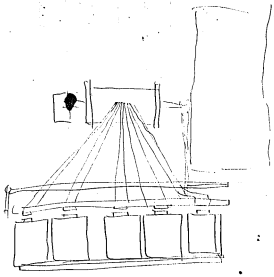
2/3 = 187.071

5 = 130.662

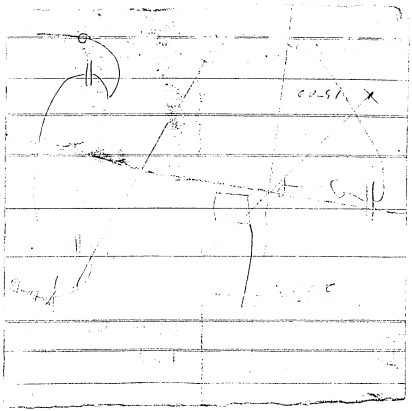
6/8 = 140.596

612.973 = Total Length

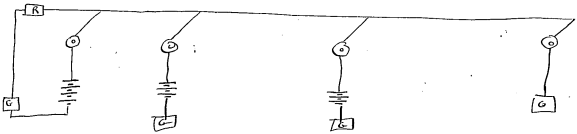
56

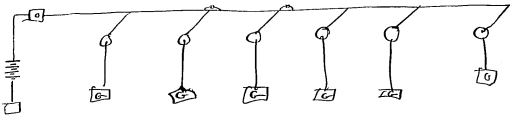


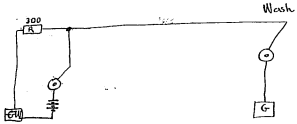
DEC 10 1871



56-4


K
C
C
C
C

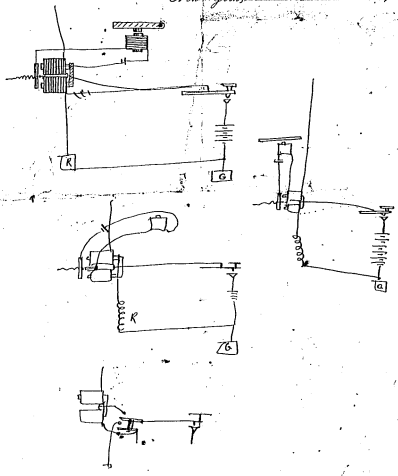

C
C
C
C
C
C
C


Wash
300
A
G

Automatic Telegraph Company,

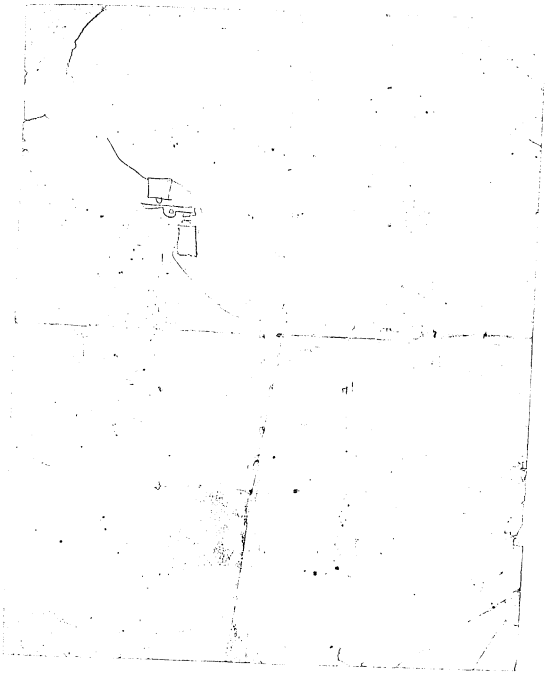
80 BROADWAY, ROOM 30.

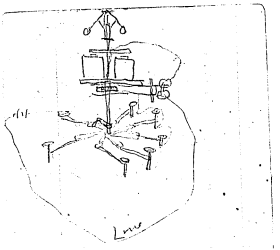
New York, 187



57-(2)

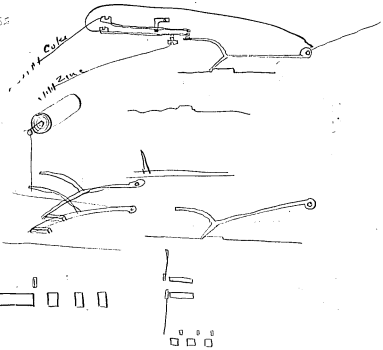
57

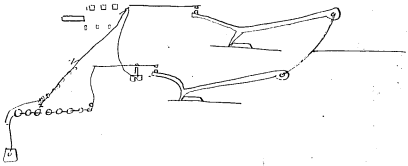


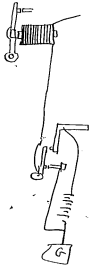


An airplane engine provided with a governor which automatically [illegible] the speed with which the [illegible] is driven, and thus [illegible] to a lever which by the side of the lever which is a [illegible] which is a pivoted

58 (1)







58

lever operated by a magnet
or by any other force
controlled by magnetism
is adjacent to the type
wheel —
On the extreme end of
the Engine shaft of an arm
on the End of this arm is
a Coiled spring
[illegible] Rubber piece
with 30 plates insulated
[illegible] each other [illegible]
[illegible]
and a finger Key
touches Each plate
The coiled spring on the
arm of the Engine shaft
touches Each plate as
the shaft make a
Revolution

THE AUTOMATIC TELEGRAPH COMPANY

No. ......

WILL PLEASE SEND THE FOLLOWING

FROM WASHINGTON, D. C.

Geo. Harrington, President.

J. C. Reiff, Treasurer.

.... 187

OFFICES.
New-York: 66 BROADWAY.
Philadelphia: 310 CHESTNUT STREET.
Washington, D. C.: 1409 PENNSYLVANIA AVE.

To

58

E.119 p.59

List of articles to be manufactured by Scientific Toy Co - with prices.

Sewing Machine for little Girls	2.00	Air Pump	2.00
Magnetic-shock-shocking Machine	2.00	Spectroscope	3.00
Induction coil for "	2.00	Electric-Bell.	1.00
Magnetic Engine. with battery	1.50	Lathe.	5.00
Magnetic Locomotive with track	2.00	Planer.	5.00.
Printing Telegraph Machine,	2.00	Drill Press	3.00
Printing Press	3.00	Steam Engine	1.00
Printing Case of Types	5.00	Caloric "	1.50
Printing Machine.	1.00	Gas Engine	1.50
Microscope	2.00	Kaldescope	50
Galvanometer	1.00.	Turbine Wheel	1.50
Gas Making Machine	4.00.	Fire Engine	1.50
Loom for weaving.	4.00	Lithograph Press.	5.00.
Band Saw.	3.00.	Electric Steam Boat	3.00.

10,000.

10,000

59

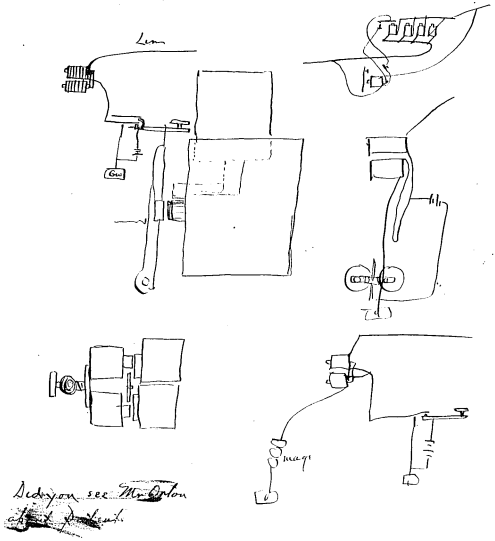
The Gold and Stock Telegraph Co.,

Executive Offices,

MARSHALL LEFFERTS, President.
JOSEPH M. COOK, Vice Pres't.
NORMAN C. MILLER, Sec'y & Treas'r.
GEO. B. SCOTT, Sup't.

No. 61 Broadway, New York.

" *New York,* 187



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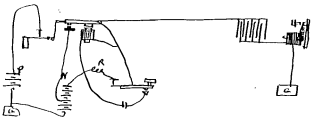
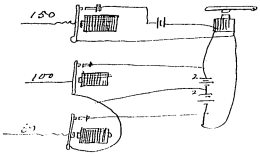
NORMAN C. MILLER, Sec'y & Treas'r.
GEO. B. SCOTT, Sup't.

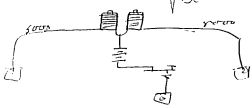
No. 61 Broadway, New York.

New York, ...187



59

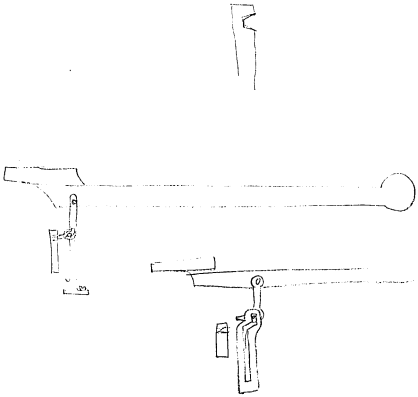

150
100



4,17 40,000

6 700 4,000

12:-09 4,000 7000. 4000



Potassium

Potassium

Potassium

Potassium

Potassium

Potassium

Potassium

Potassium

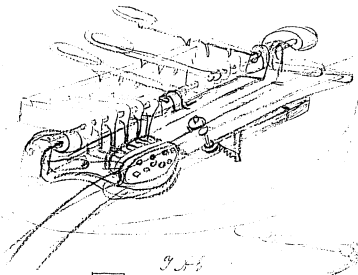
This is a specimen of the Binding Screw of

This is a specimen of the Binding

This is a specimen of the Binding

This is a specimen of the Binding

This is a specimen of the Binding



Tools, actual value, not cost, 17. 656. 46.

Unfinished Work, Unusual Ptrs, actual cost mfr. 8. 644. 49.

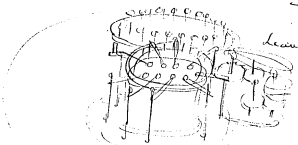
Raw Stock, steel rod & brass wire for Ptrs 1 201. 34

Outstanding debts 2 240. 86. 29. 802. 45.

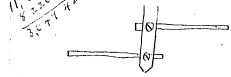
Stock in Trade 6 045. 53.

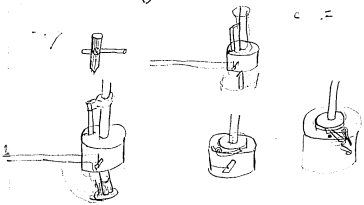
2) 23. 757. 92

Leaving Tot. 11. 878. 96.



11. 878. 96
8 = 26 34
32 71 42





Bills to be paid.

Hearey.	13.00
Pries Avon	28.00
Kennan	10.00.
Smith	154.54
Hawes	81.11
Deden	17.92
Kelley	53.46
Williams & Tobin	28.00
Merchandise	25.00.
Douglas	500.00
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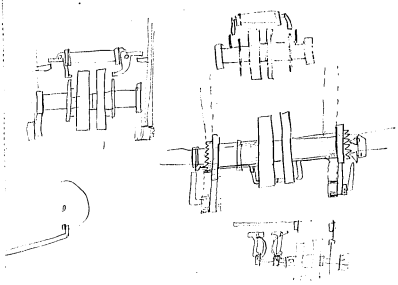
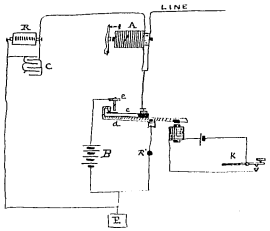
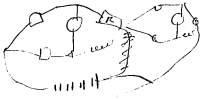
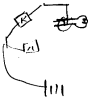


and ~~subsequently~~ has been adopted by Mr Stearns
Duplex Telegraphy is a German ~~invention~~
idea but the two problems above stated
essential to its success were unsolved by them
Mr Stearns Combination and the one adopted
upon the American Telegraph lines is shown
in figure 1.



A. is the Duplex relay for receiving the signals from
the distant station It has double coils wound
around its cores. one coils in the circuit of the
regular line and one coil in the circuit of the
artificial line, The current from the battery B
passes over both circuits in the same direction





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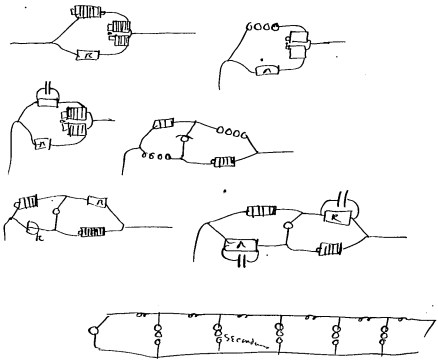
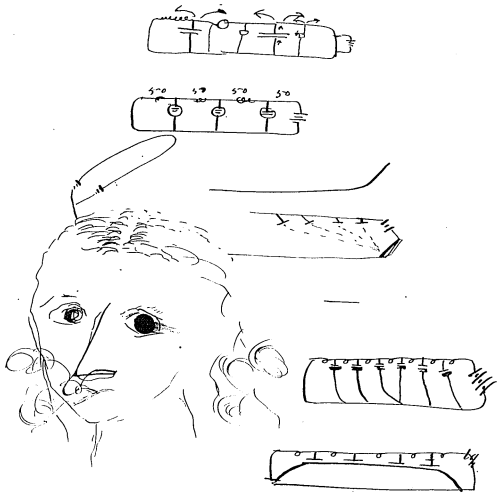
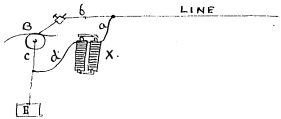


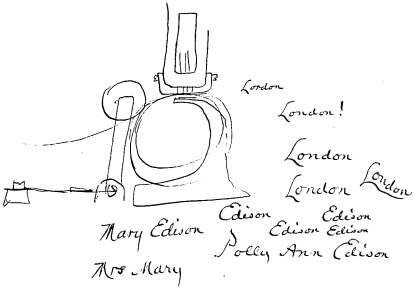
artificial Cable with accendaria.



a submarine Cable V generating in a small Compass a Current equal to and precisely like the discharge Currents generated on that immense Condenser the Atlantic Cable, An instrument which unlike a Condenser preserves ~~it~~ Electric Continuity, I applied it to the Chemical Recording instrument in this way



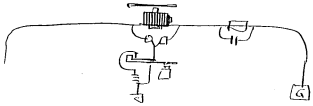
X is the long electro-magnet. placed in a branch of the line a.d. B is the recording inst in the other branch b.c. a dash comes over the wire ~~One~~ ~~Hre~~


London
London!
London
London
London
Edison
Edison
Edison
Edison
Mary Edison
Polly Ann Edison
Mrs Mary

E-1719-p82

62- "

21.



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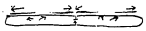
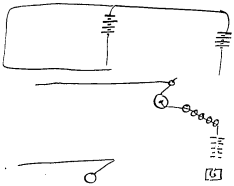
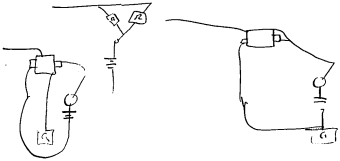
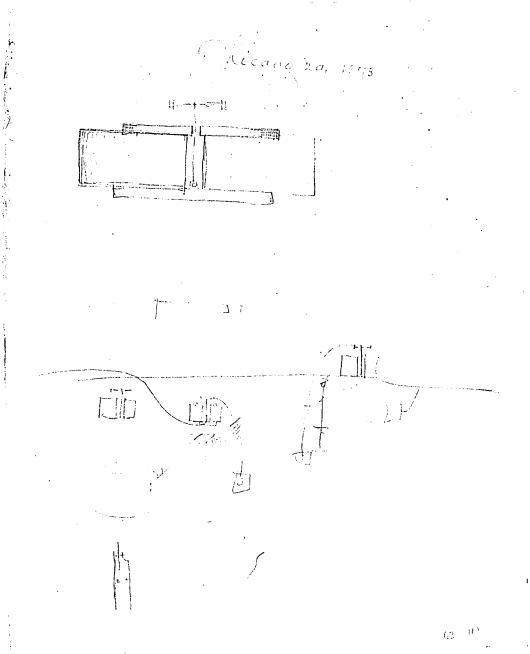
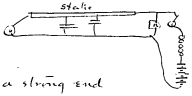




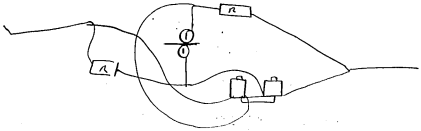




Try secondaries thus.



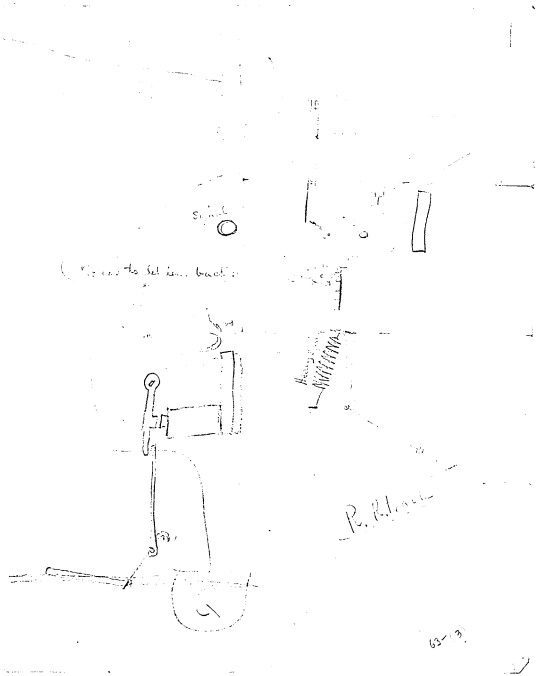
~~to~~ give a strong end
with -



Try This

Try induction from a single layer of No 30 on long Compensating Magnet. then two layers

Try which works strongest with a given strength on regular Relay. a polzd R of high or low R. Low probably be strongest -



63

JAMES PARTRICK. JESSE H. BUNNELL. JASPER N. HARLAN.

Partrick, Bunnell & Co.

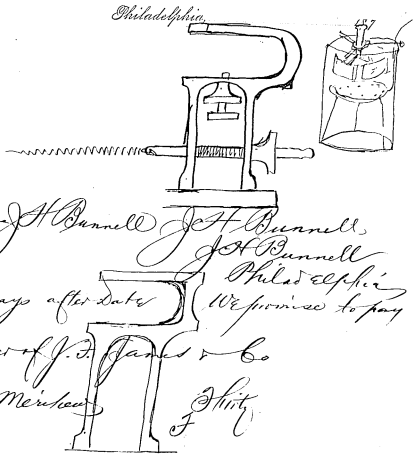
PRACTICAL TELEGRAPHERS AND ELECTRICIANS,

MANUFACTURERS AND DEALERS IN

Telegraph and Electrical Instruments and Supplies,

No. 38 SOUTH FOURTH STREET.

Philadelphia,



J H Bunnell J H Bunnell

J H Bunnell

Philadelphia

Thirty days after date We promise to pay

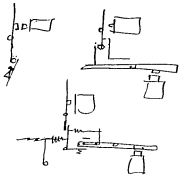
to the order of J. F. James & Co

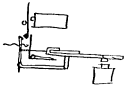
Dank Merchant Thirty

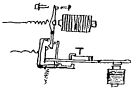
F

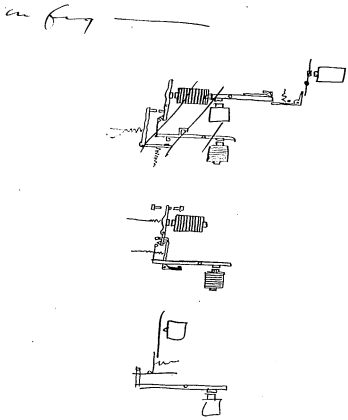
Partrick, Bunnell & Co. Pay to the order of J. F. Merchant & Co Thirty Dollars & charge same to my a/c

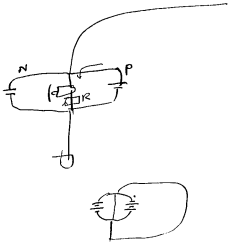
63







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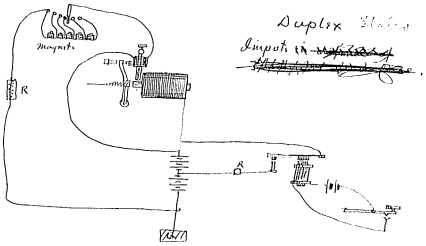
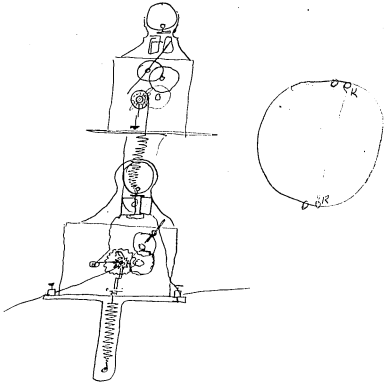


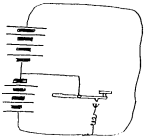
The magnets in the balancing or compensating circuit are used for the purpose of generating an after current due to the demagnetization of the iron core, which current is very powerful and by regulation made equal to the static return charge many times greater than is possible to equalize by a condenser, magnets when properly placed are the sworn enemies of static currents whether dynamic or in a muscle limiting mode.



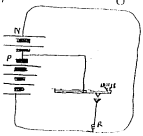
64

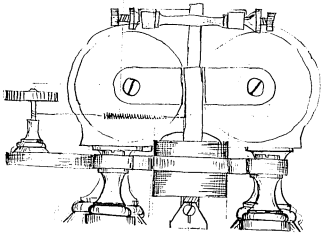
Improved method of reversing currents and manipulating

Throwing a battery upon a closed circuit



Reversing the direction of the current in a closed circuit.





The Gold and Stock Telegraph Co.,

Executive Offices,

No. 61 Broadway, New York.

MARSHALL LEFFERTS, President.
JOSEPH M. COOK, Vice Pres't
NORMAN C. MILLER, Sec'y & Treas'r.
GEO. B. SCOTT, Sup't.

New York, ... 187

Get my Magnet box. get 4 Stearns condensors.
get high resistance delicate relay. Get back spring point Key. get some very high resistance magnets for leaks

Send 120 cups cotip short ckt it quickly afterward to 20 cups.
Shunt very high res sensator relay with several relays connected quantity. Leak at 3 places with several high R relays and R coil, for changes try condensors for leak.
Reverse short whip to clear only when leaks and shunt not used =

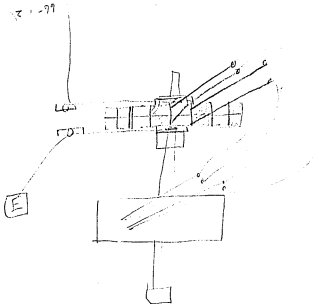
Try Relays in Equating Line Duplex.
Try putting relay in main Duplex and equating for disturbance by putting another in Equating Circuit.

Try this make wire of Phila ckts.

(2)

65

to make it a party question,
& they might not relish the idea
of a Yankee own son traversing
around Mass. Legislature forever
but if he thinks he made it a
[illegible] among
the best citizens of people
who have Brown blood here,
& a Bank account to give him
a certain operation might not
John Bull be benefitted by his
services in using the usual
members to do his work even
if they Board in Surrey & get a
dollar a day



B. ✡
get approval from General

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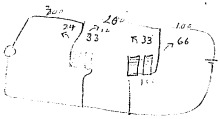
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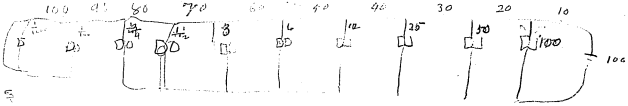
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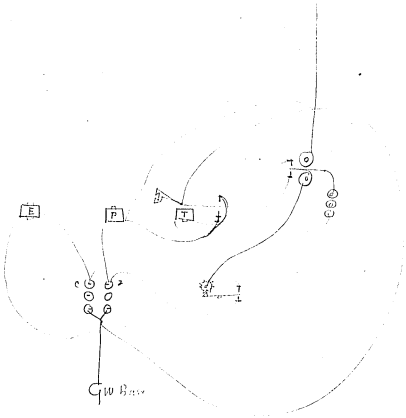
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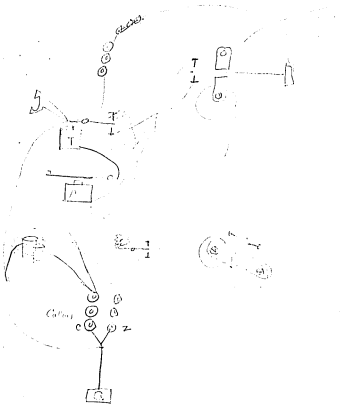

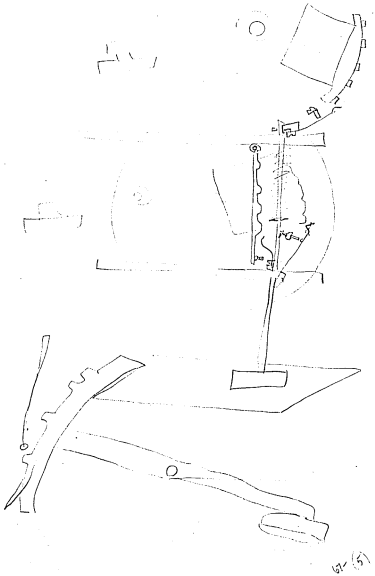

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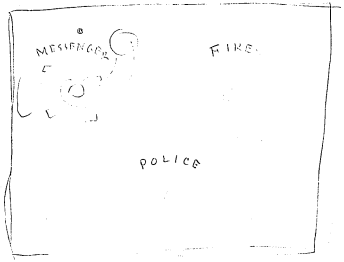

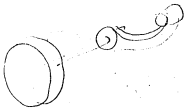

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1 ohms. 3 degrees increase $\frac{1}{100}$

1 " 6 " $\frac{1}{100}$

9 $\frac{1}{100}$

13 $\frac{1}{100}$

16 $\frac{1}{100}$

19 $\frac{1}{100}$

22 $\frac{1}{100}$

25 $\frac{1}{100}$

1 .13

28 $\frac{1}{100}$

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104 37 $\frac{1}{100}$

40 $\frac{1}{100}$

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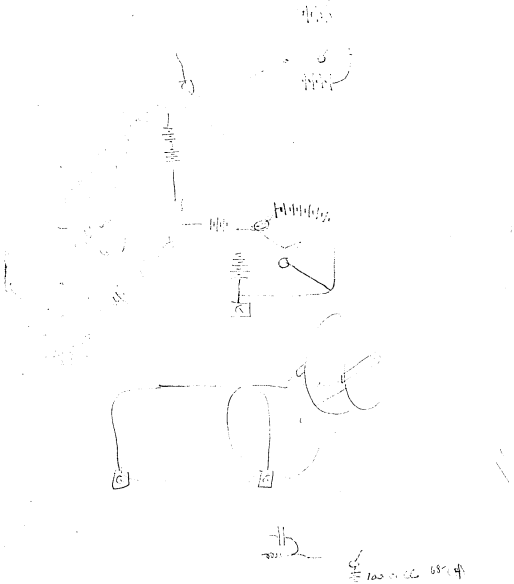
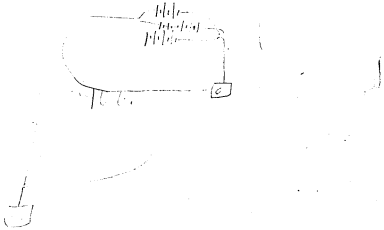
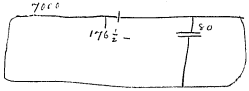






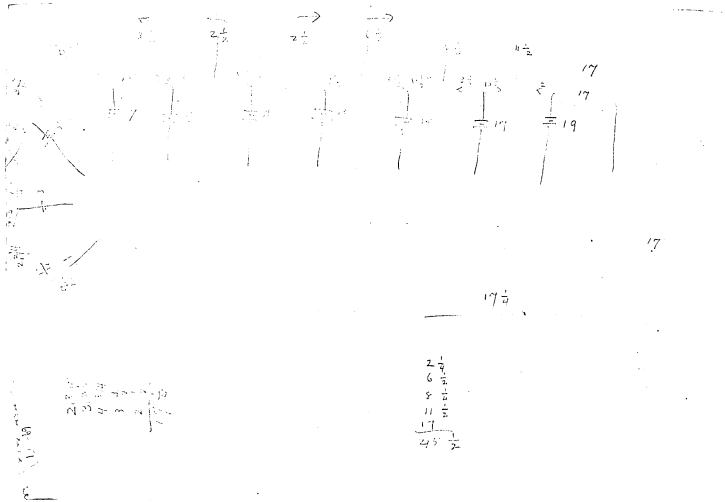
Brainweight [illegible]

HB2 Combined with
1 atom of Oxygen Protoxide,
Neither A to form
Water & Leaves
at an under acid
pobly Nitrous acid

protoxide [illegible]

68

(5)



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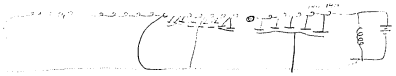
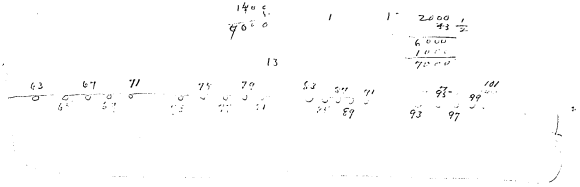
251





184.

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126

$11\frac{1}{2}$

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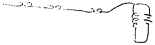
1325

$2\frac{1}{3}$



19 ~~52~~

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- 200 - 15 - 533 - 5
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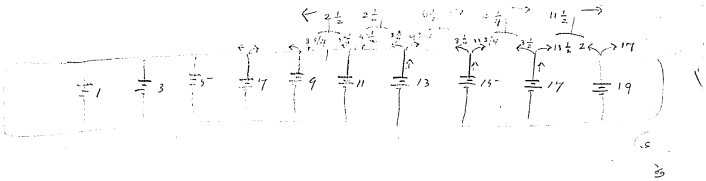
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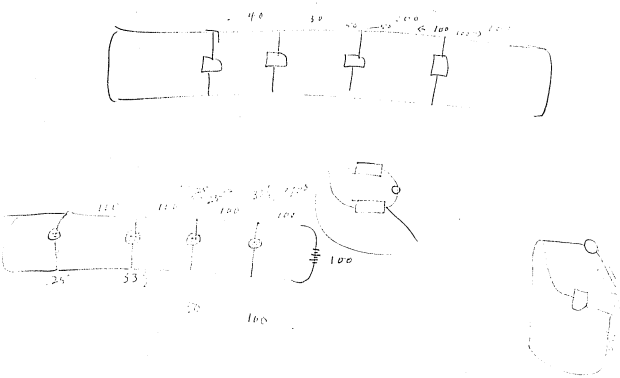

1	3	5	7	9	11	13	15	17	19

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11 3/4
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1
4
1/10
6/10, 4 .1
17

2 ← 19 → 17
17
3 1/2 13 3/12 1/2
1/4 15 11 3/4
3 1/4 13 9 3/4
70. 30 5/2 11 5 1/2
5 1/2 9 60 49 3 1/2
6 1/2
3 1/10

3/4 7 1 3/4
4 5 1
2 3/4 3 1/4 2 1/2
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4 1/2
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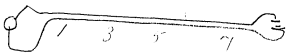
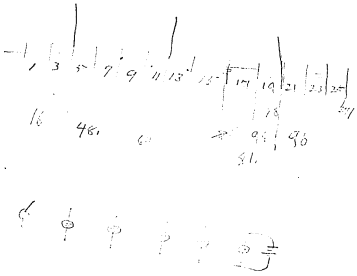
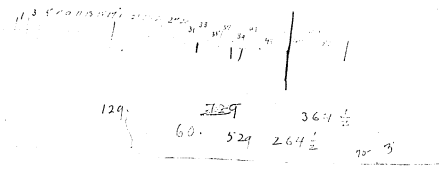
70







9 - 4 = 9

1 3 5 7 9 11 13 15 17 19

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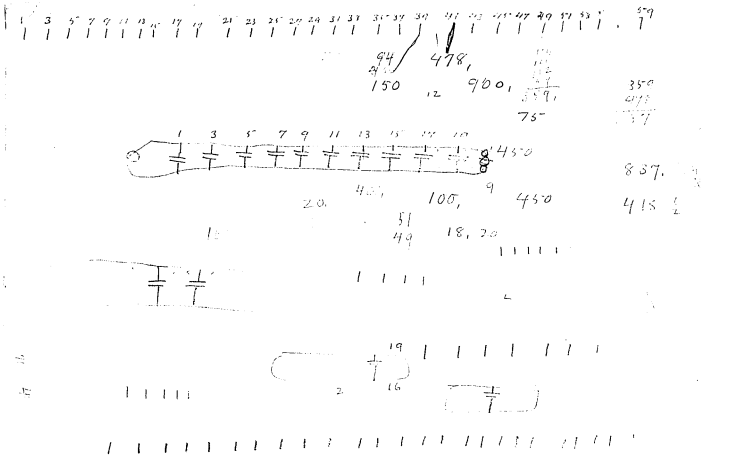

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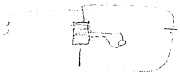


145 square feet

20880 feet square well Mixed 12 to $\frac{1}{2}$ of a mixed

145, in 12

80

2900,

15

2 $\frac{1}{2}$ times

1 foot 3/8

36 feet,

145

5

1750

15

2900

36

115 2088

80

345

7140

145

5

725

-135

52201 35

36

810

405

36

500

18000

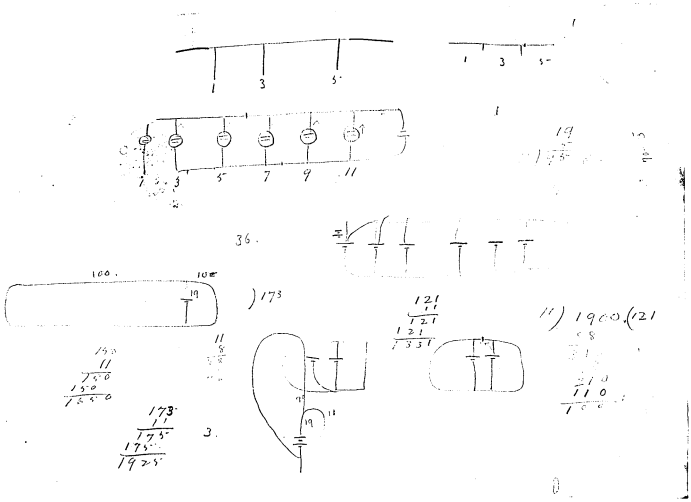
125

36

7500

375

4500


36.
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173
121
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175
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1925
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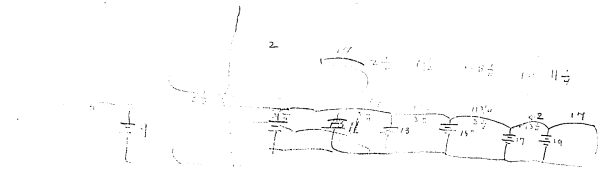

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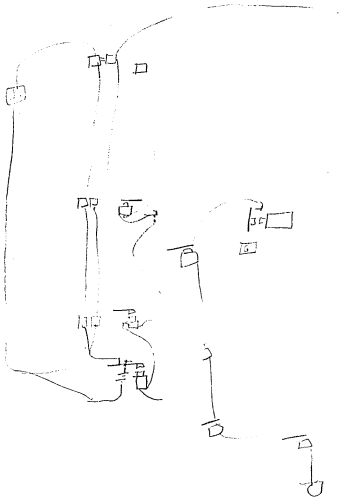
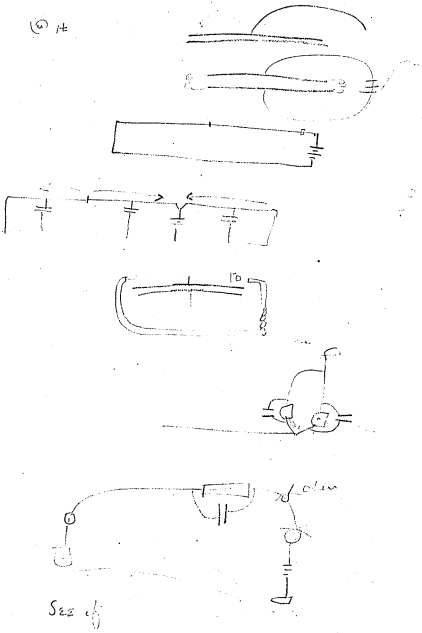


71 (3)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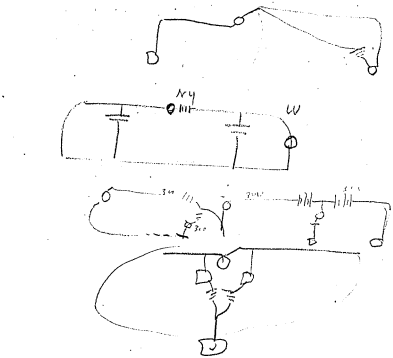
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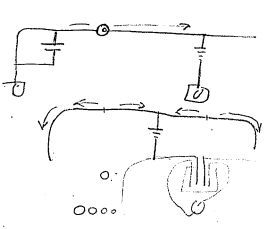

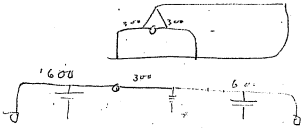
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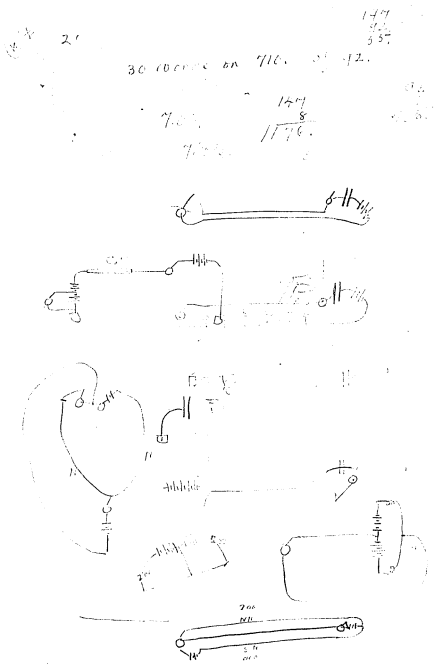

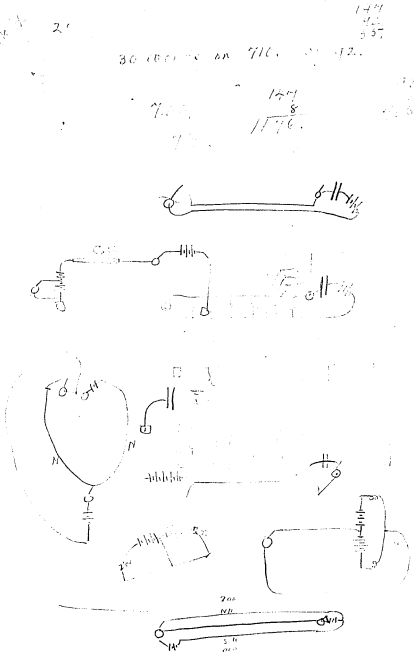

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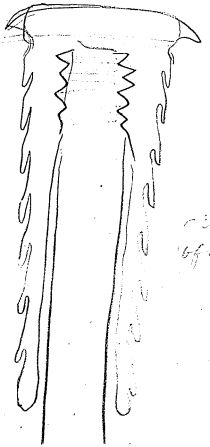
Insulator



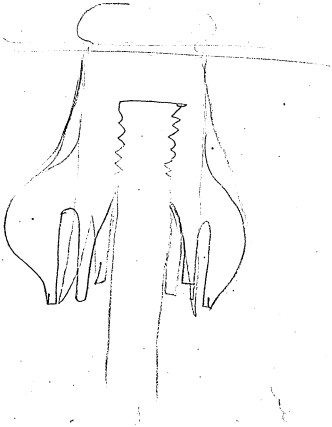
cut 1 turned
of wood

71.(5)

71

72(1)

72



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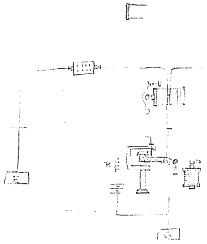

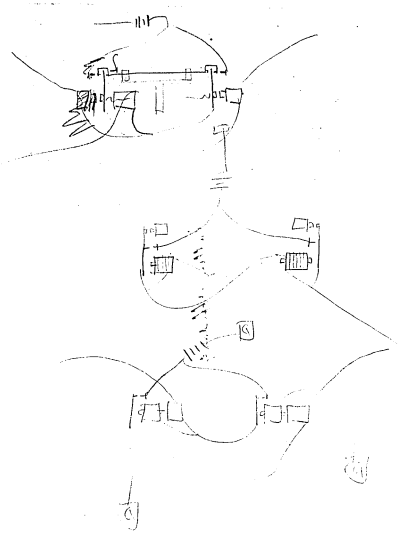

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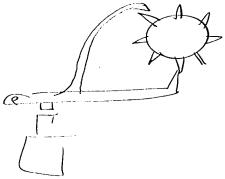
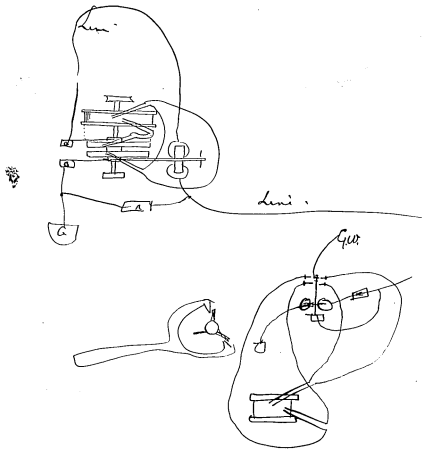
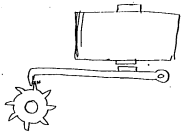
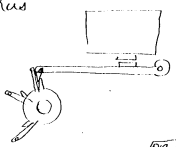


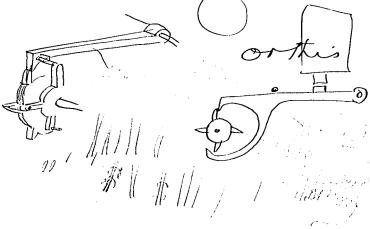




E-1719

Let it drop by gravity if it will do it quick Enough if not make a double wheel That will Automatically replace the Lever Thus





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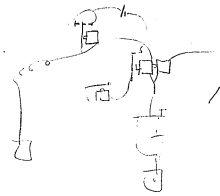
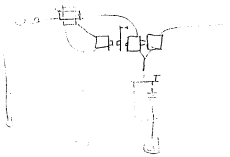
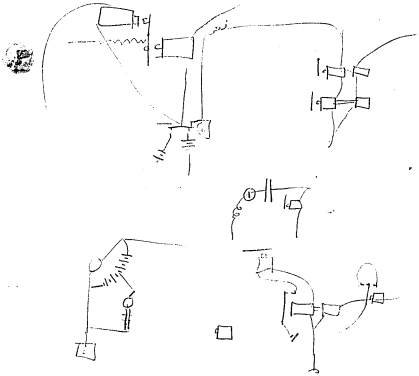


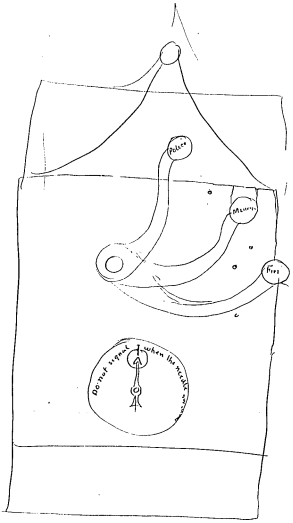
No 1



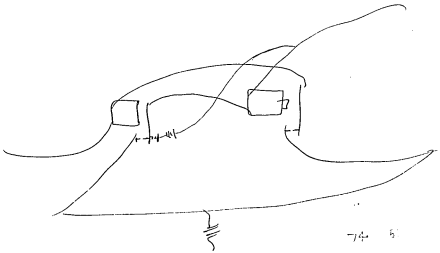
No 2

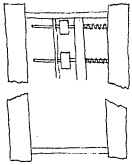
74

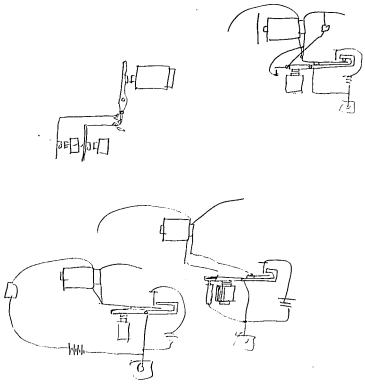


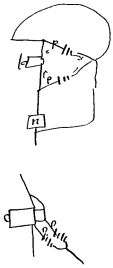

Police
Ambulance
Fire
Rescue squad
where the accident occurred

Police

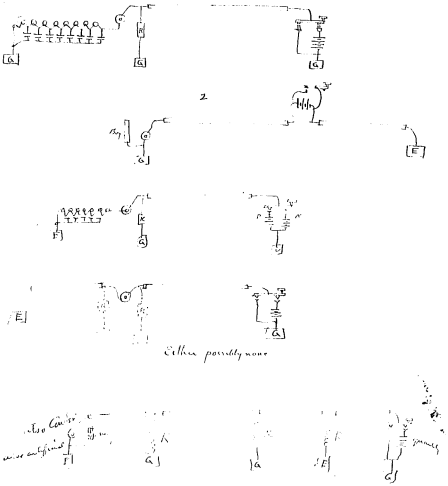


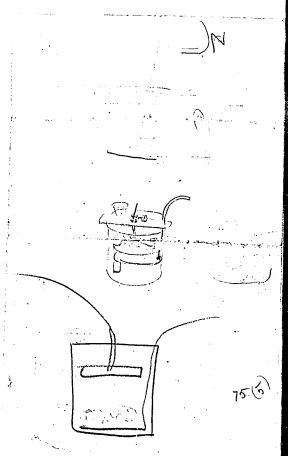






Greenwich





75

75

Telegraphs—No. 295.
Service Message Form.

POST OFFICE TELEGRAPHS.

Free Message on Official Business.

Prefix_____ Code Time_____ No. of Words_____

_____ OFFICE. _____ 187 .

Office from	Time Recd.	CLERK	Office to	Time sent	CLERK

From { Gilton Morgan St Station

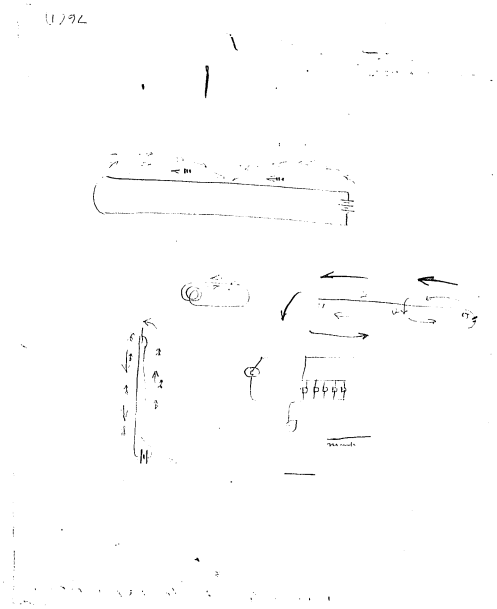
To { Ealing D Q Station

Great Western N.R.

Signature of Sender_____

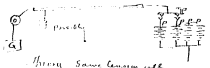
G [511] 1,000,000 3 | 78

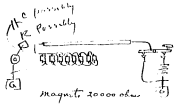
75

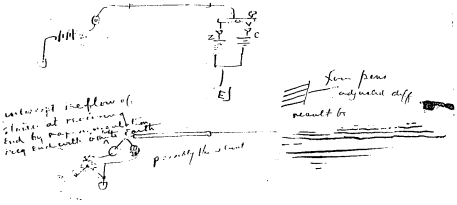


76

Page 2 Greenwick







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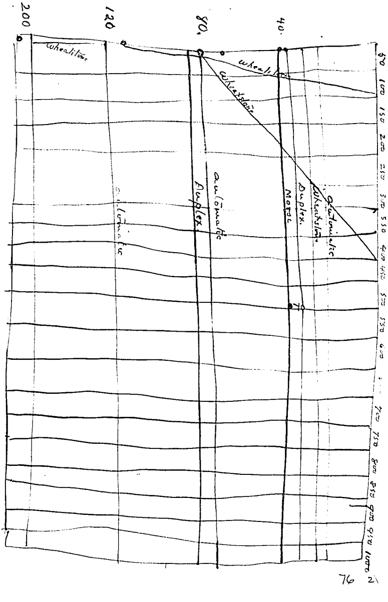
200
120
80.
40.
Wheatstone
Wheatstone
Wheatstone
Wheatstone
Automatic
Automatic
Automatic
Duplex
Duplex
Morse
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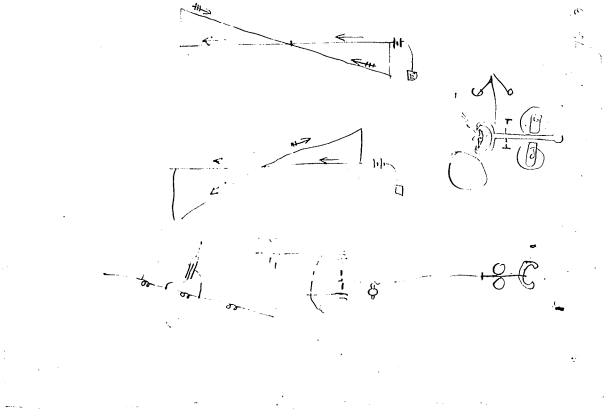
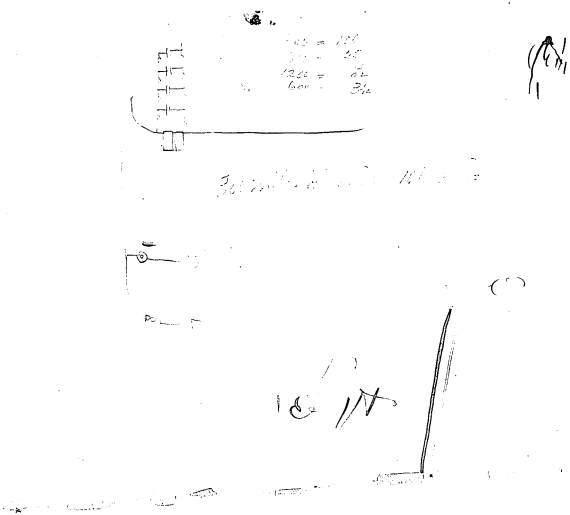
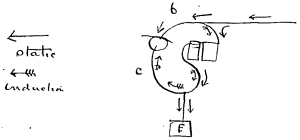
1000
76





Charged, now when the battery is disconnected. there is instantly a very slight weaking of the current. This weaking generates an inductive discharge in the electro magnet in the opposite direction. This circulating within the local circuit puts the instrument on a point of no potential ie a neutral point. The direction of the two currents will be shown by this diagram



You will see by the direction of the arrows ~~as the static charge gradually falls~~, that the current balance each other in the branch b.c. ~~which~~ the static has free route to the ground through a.d.

76.14

76

Telegraphy there was a harder problem to solve a dash was received thus. from Washn

	Sent	Recd
40 w 150 words per min	—	Reg: static
300 w per min	—	Reg: static
Word This. 300 w per min		

at 1500 words per minute nothing but straight marks ~~were received~~, without could be Rec'd

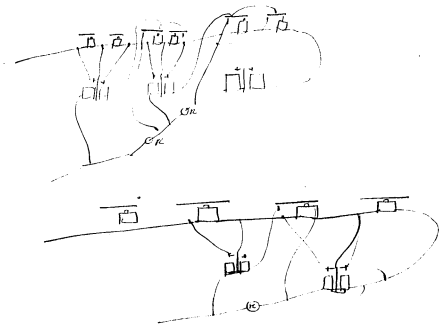
you have no double coil and balancing circuit but must take what comes through my lines and apply some device to seperate the signals from the static charge. in the case of Duplex the signals are so slow that the were discharges itself completely between each dot. but in "Auto" the spaces between

To apply a remedy at its fountain head

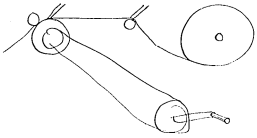
1/2/2

20

Double movements



77



77

Chemical Teighs

Shunted Recq instrument, No 1225- 1854
Lines 24 to 27. p. 2.

Derivation Leaks along line. etc No 1225- 1854
p 2 Lines. 29. to 40.

Shunts. Leaks No 1225- 1854. p 12 Line 34 to
40.

Shunted Receiving instrument page 13. Line
6 to 9. Same patent

Rollin. P.: No 2860. p 5- Line 15-
" " Allen 2204 drawing

Leaks - abridgment. p. 419

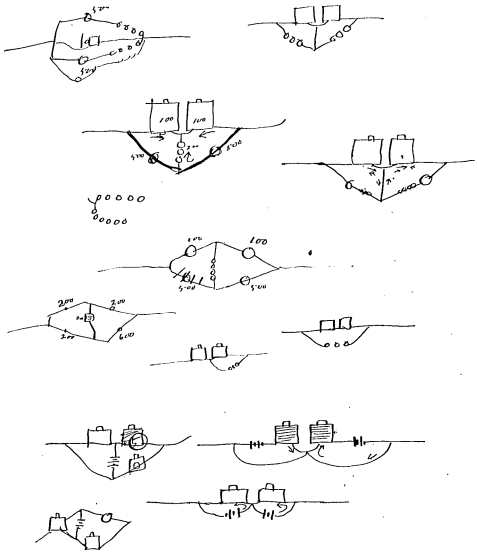
Leak Abdgmt p 201

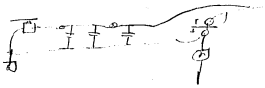
78

78

water
1500
500
400
200
45
100
100
200
Chrysolecia Guatemalensis
Adonis Gigas
Adonis Longipes

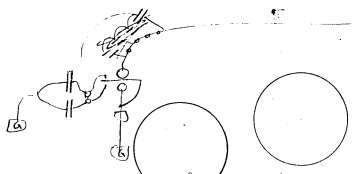
78





E-1719

(1272)



Stonington

Steamship

Thompson

Cunard Royal Mail

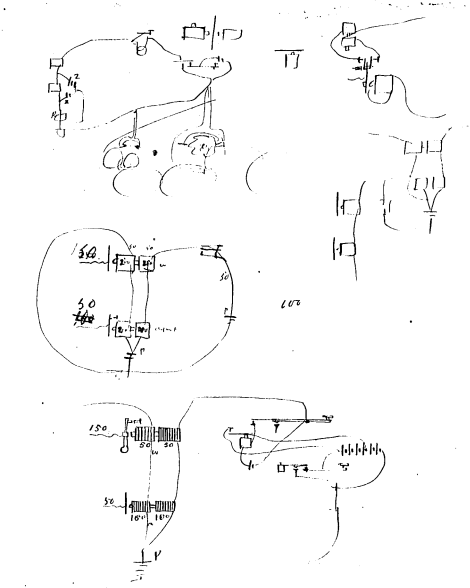
Stc

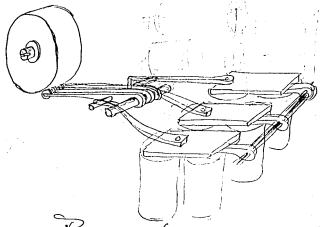
Java

Cunard Royal Mail Steamship

7x 31

78

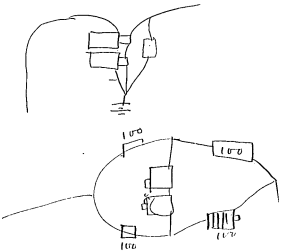




Roman Letter perforations

J 9 Morse Telegraphing

This is a specimen of
telegraphing in Roman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100
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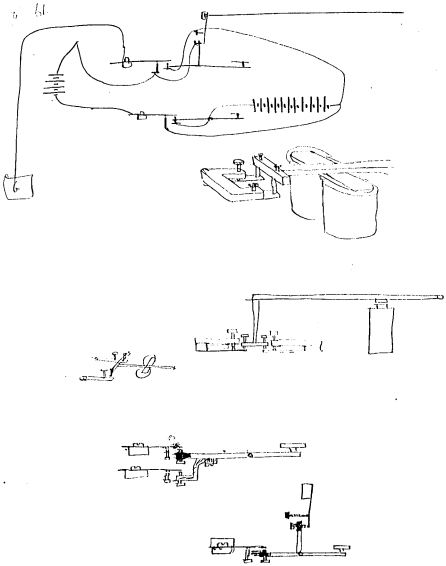
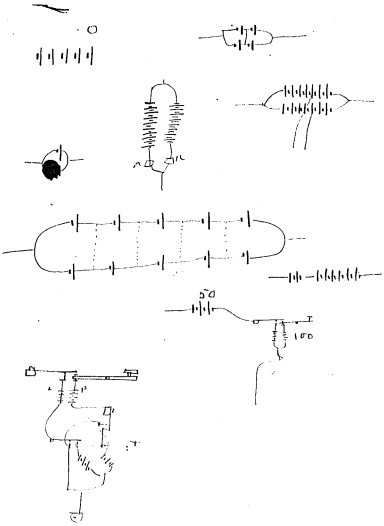
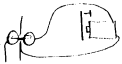



50
100



1

Telegraphic instruments may be divided into two classes First those which receive and transmit signals represented by conventional Alphabets of conventional characters.

Second ....

Telegraph Instrumentation

1 Visual with conventional characters — Electrical Movements
2 " Roman Letter.
3 Sounder Conventional
4 Recorder Conventional
5 " " Roman Letter
6 None

Telegraphic instruments may be divided into three classes. First the Visual Second the Sound. Third Recording.

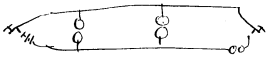
The Visual except upon Submarine Cables is fast falling into disuse. The Sound is used only in America and the Recording generally throughout the world

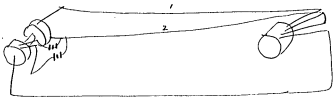
Telegraph Circuits may be divided into 4 Kinds. 1st Local Circuits. Ordinary Line Circuits Compound Circuits with Repeaters or translators and Submarine Circuits

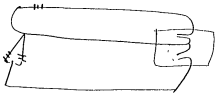
The Morse system instruments are worked by three different systems of Currents

79

79



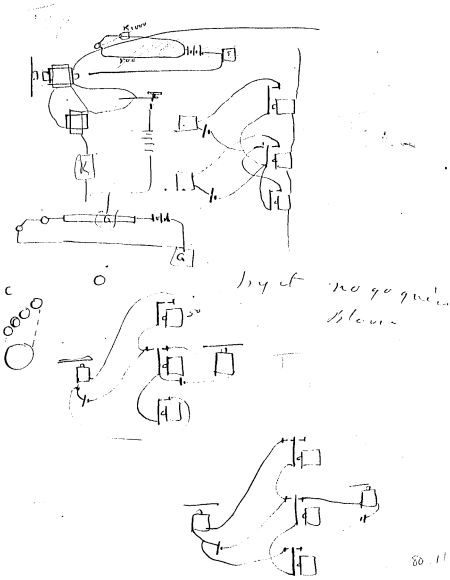




Have pupils make a Microscope & ~~[illegible]~~ use a very fine print see how delicate a current will mark also use the Micro to investigate Current passing over dirt on glass jump spark from 100 cells battery. action take place in decomposition. wet surface & Other phenomena

Attend to Piano project.

79



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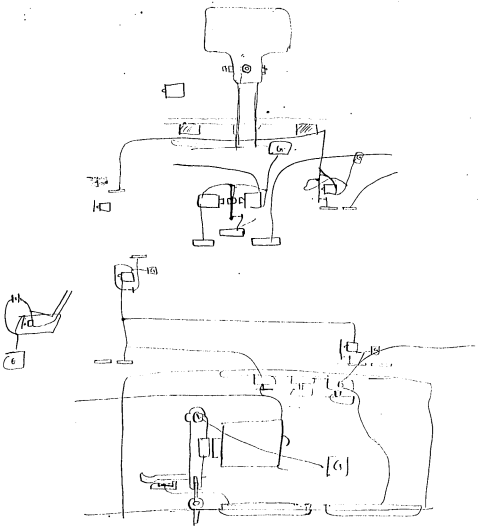
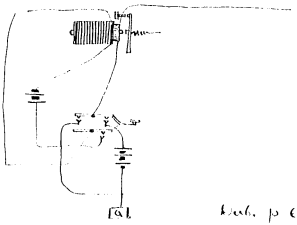


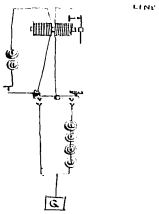
80

Gintl. Duplex.



Bab. p 629.

or plainly



1854 1110. John Henry Yo[illegible]

Two Clockworks, pendulum & type wheel – Relays, Magnets &c – Local elec. = Synchronous –

1864. 1720. R. A. Brooman

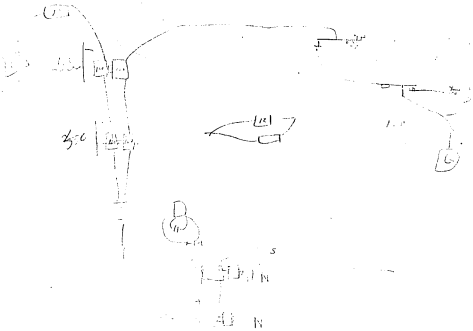
Two Clockworks, two mags one poly all type co. type wheel
Galv. mags worked by movement of clock wheel of Clement

1856. 1050. Pete & le Comte de Fr Morzan
Conf. on J. & Damoulin
Clockwork. Electro magnet & Escapement
poly & Local

1856. 2345. H Mapple & C. M Mapple
Nothing definite

80 H

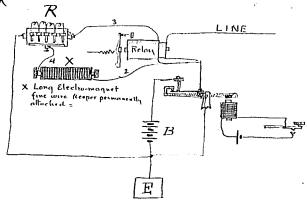
80



80

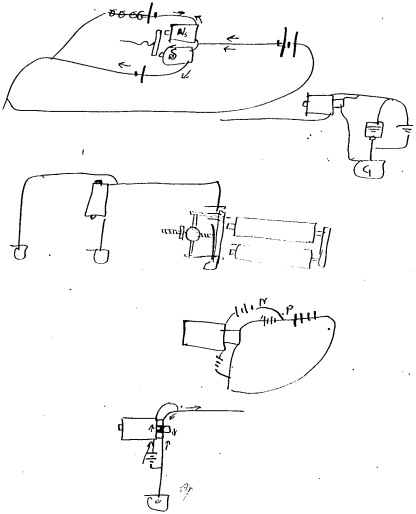
C. L. Pouraud.

Here is a Duplex, which dispenses with Stearns improvement, (the addition of the Condenser,) and replaces it with a more powerful instrument to neutralize the static charge on the receiving instrument at the transmitting station. I have sold it to the Western Union and if you and Mr Latimer Clarke can do anything with it you can have it remembering my "dower" $\frac{1}{3}$ -
I will show it as applied to the Amn System



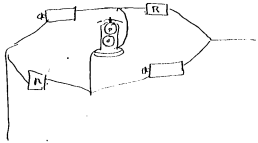
R is a rheostat. X a long magnet wound

81

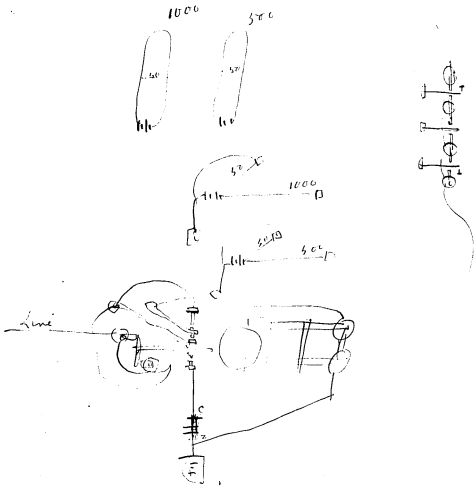


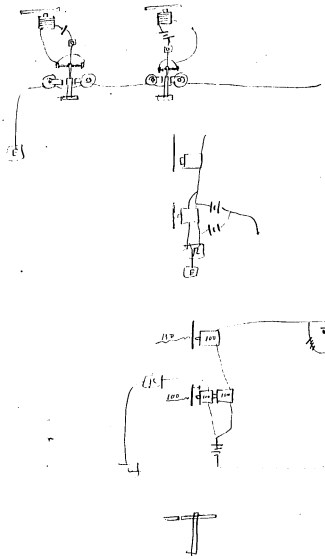
81

for working French Cable without Varley's Condensers.



Eight

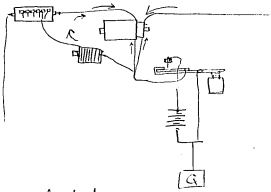




81

81

a Duplex telegraph.. I apply a Common electromagnet in a way he dont. and obtain a more powerful device for balancing the Closing and opening static Charge. which will Cope with these underground wires better than the Condenser, you and him can have it giving me $\frac{1}{3}$ if you realise,



The device which he calls his for putting on & off the Main battery without effecting the Continuity of the Circuit was invented by Moses & Farmer in 1858. and by an Englishman 186:. See English patent No ———

81

Brett in his Printer used the hand transmitter. Shaffner p 282

Brett in his Printer used a type wheel containing figures, letters spaces & other signs. Shaffner p 282

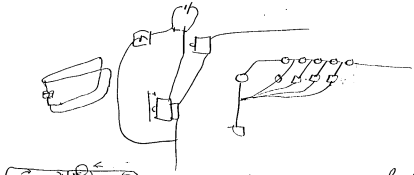
Brett used positive and negative currents for working a release escapement for rotating a type wheel. Shaffner p 283

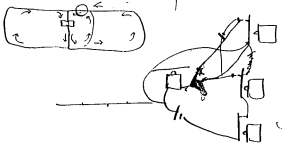
Zanni, 1868. English Pat.
No clockwork—

81 (b)

81

To twenty fourth Thousand
fourth Ward Politician: Norman C Miller

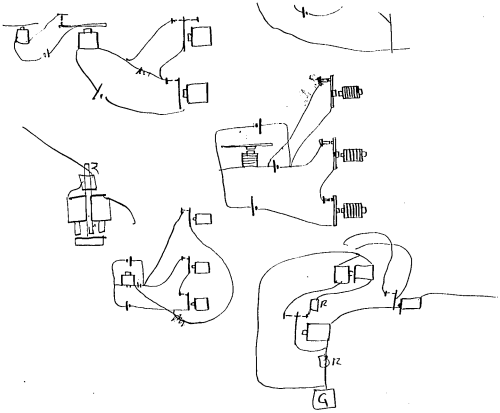




Protoxide of iron formed in the pan

Find out the most delicate test for Protoxide of iron

82



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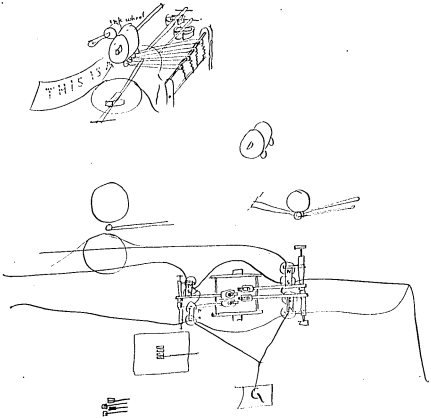

THIS IS

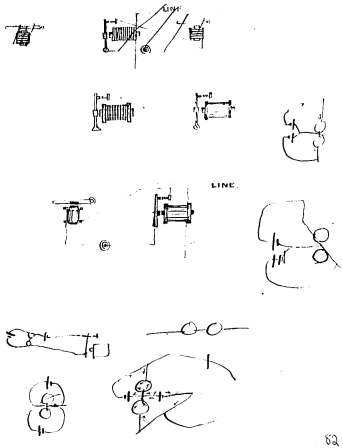
as Wilbur if he wont afraid
~~the~~ of allowing so much that is
~~Electrical Decomposition to pass~~

bright his brain.
They may be slowly
decomposed into

I expect Wilburs brains are being slowly decomposed ~~th~~ by excessive dabbling into the Electrical ~~The product~~ well probably be the phosphide of "Refer to English Patent No 50 50 & the Hydrate of.
"Your 108th claim is disallowed =
(G)
If he will test the ~~Hydrate~~ phosphide of old English patent & the Hydrate of Charcoal allowed with a Copy of with a few pounds of hours & dusks of from it broken ~~Electrical Injection~~ of the precious man. The product will be ~~the~~ Little patent a very old but lately rejuvenated Compound

82

Local circuit movements Figure 1 gives the ordinary method of arranging the local circuit.



82

82

We have a similitude in water. Suppose if with an engine to a certain force ~~so much water cannot~~ ~~to pass through a given pipe~~ will pass 100 gallons of water through 100 feet of pipe 1 inch in diameter in 1 minute. Then that same force will pass only 50 gallons of water through 200 feet of pipe of the same dimensions, in the same time. If the diameter of the pipe be reduced still less water will be forced through. The addition of more pipe or the reduction of the size adds resistance to the passage of the water.

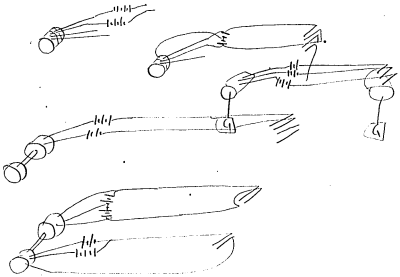
With the battery it is the same for ~~a~~ battery ~~an~~ a current of ~~with~~ 100 feet of ~~iron~~ wire ~~and~~ of a certain size 100 units of electricity will pass in 1 minute if now the wire be made 200 feet long but 50 units of electricity will pass in that time. The a ~~reduction~~ in ~~of the wire~~ ~~of~~ the diameter of the wire adds resistance to the passage of the electricity. ~~The wire may be so lengthened~~ ~~that~~ natural

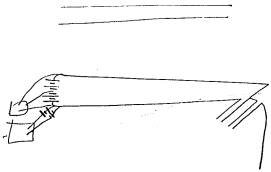
In the Voltaic ~~Bat~~ circuit the battery itself forms an absolute ~~to~~ the Conduction of its own current, the liquid between the Copper and the zinc offers considerable resistance ~~to~~ the passage of the current as many feet of wire. If that path from the zinc to the

Copper had no resistance, there would still be the resistance of the battery in the circuit,

~~To reach the point~~ When the resistance of the Conductor of the Circuit outside part of the battery the Zinc & the Copper is equal to the resistance of the fluid within the battery ~~portion~~ then ~~the~~ all the electricity which the battery will generate passes within the circuit - by still further decreasing the resistance of the outside part of the circuit no more electricity is generated but the total amount ~~which~~ is confined to a smaller circuit ie ~~each~~ if the resistance of the circuit which is conveying the total product of the battery was reduced one half each ~~atom reduced~~ atom of the ~~entire~~ compared the circuit ~~of the~~ reduced circuit would be conveying twice as much electricity as in the former case but the total amount will ~~[illegible]~~ remain ~~the~~ unchanged

If the ~~plates~~ Zinc & Copper plates are placed very near each other the internal resistance of the battery is reduced ie the electricity ~~does not~~ is not compelled to pass through such a length of liquid which is a bad conductor. Consequently the capacity of the battery for generating a current increased if how the outside





using double helix, etc

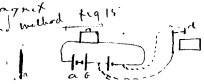
Connections for ~~ck~~ controlling the local magnet
circuit when the Relay magnet is acted.

first method fig 13

Second Method fig 14

the ~~local~~ two batteries oppose each other
when the relay lever is attracted to the
magnet

Third method fig 15

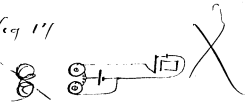


When the relay ~~arm~~ lever is away from
the point the batteries a b oppose each

other and the battery c acts to repel the local magnet. If the Relay lever is brought forward to the point d ~~thus~~ the battery c is shunted leaving a and b opposed to each other and no current within the circuit.

fourth method fig 16.

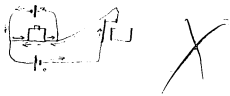
Sixth Method fig 17



When the Relay point connection is broken the current circulates in ~~one direction~~ one spool, When both circuits are intact the current (83) passes in opposite directions through both spools and balances each other

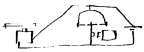
and produces no effect upon the magnet.

Seventh Method fig 18.



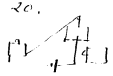
When both circuits are closed no current passes through the magnet as shown by the arrows

To make a local magnet ~~open~~ closed and ~~closed~~ open when the armature bar of the relay is closed. fig 19



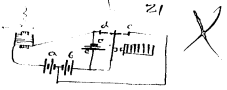
To make a local magnet open and close when the armature bar of the relay is closed

figure 20.



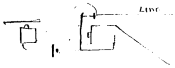
to make a local magnet close and open circuit by one forward movement of the lever of the Relay

21



The batteries a and b each have ~~double~~ ~~twice the number of~~ twice the number of cups ~~as~~ the battery C. for ~~the~~ connected to oppose each other the battery C. which operates the local magnet when a & b are opposed to each other is shunted when the ~~a~~ relay lever is in contact with the point d. ~~and~~ the ~~sou~~ local magnet core is unattracted ~~away from~~

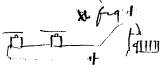
Fig 5 5



In the figure 6 the Local magnet ~~forms a part~~ is placed in the main circuit when the armature of the relay remains unattracted, but is disconnected from it when attracted ~~[illegible] the main circuit by much power [illegible] same~~ ~~or at the [illegible]~~ owing to the size of the wire upon the local magnet it remains unaffected by either the local battery or main battery when in the main line, ~~reduction is taken of this arrangement in the~~ ~~author~~ Bellon repeater

To make one Relay operate two local magnets.

First, and ordinary method.

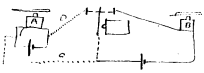


84 1

84

neutralized by that of the other, and a quick action of both magnets is obtained if the two shunts are exactly ~~in~~ balanced

Fifth Method Fig 11



The magnet A is operated by the shunt C D and the magnet B in the ordinary ~~way~~ manner.

Sixth Method Fig 12

~~With~~ In this arrangement ~~the~~ both one magnets are operated by the shunt C D & the other by the shunt E F

~~A large number~~ ~~A~~ a great many ~~A number of other arrangements. It is obvious~~

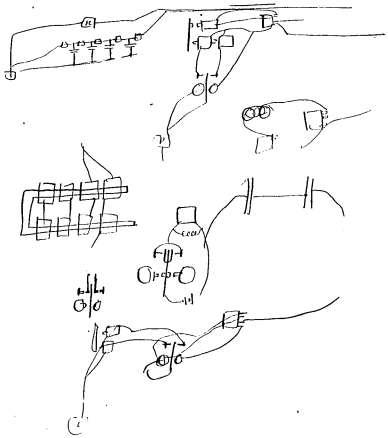
Other changes can be made by dividing the Coils of the Electro magnets

1838. No 1234. Charles Wheatstone. Clockwork only no Electrical Movements.

1848. No 12,136. Wm Henry Barlow & Thos Foster. Double Clockwork movement. advance & retrograde movement, One current advances the other retrogrades and ~~the~~ both together perform some other function probably printing the patent describes no magnets or wires and the drawings show none very obscure

1858. No 18. George Edward Dering. Printing Telegrs. Describes one printer on single wave principle like Hughes. Another New - Type wheel rotated by Clockwork regulated by escapement and Electro magnets in local circuit operated by relays which work by reversals in the main circuit one relay corresponding to a P Current - one to a N Current. There are five Escapement wheels One Escapement is worked by an Electro Magnet in a Local Circuit

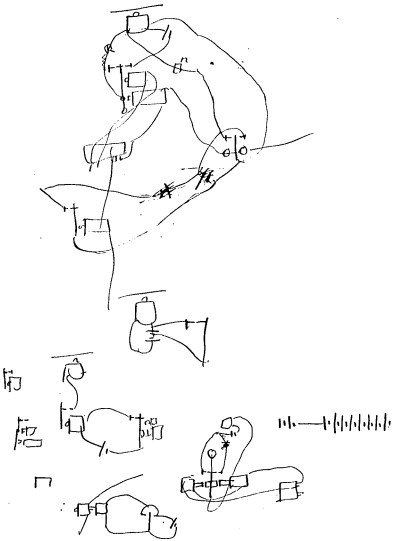
84



1846. 11 481. Moses Poole -

A most ingenious mode of effecting the printing. The type wheel is rotated by a Clockwork Controlled by an Electro Magnet - The printing hammer constantly comes up & down at regular intervals whether the type wheel is being rotated or not. The time between one beat of the pendulum & another is sufficient to make one revolution of the type wheel so that if the word letter B is to be printed. When the type wheel is advanced there and held till the printing hammer is brought up by the action of the Clockwork etc so there is plenty of time to go from any one letter to another before the hammer comes up. The Cords be improved & be made unbreakable.

85



85

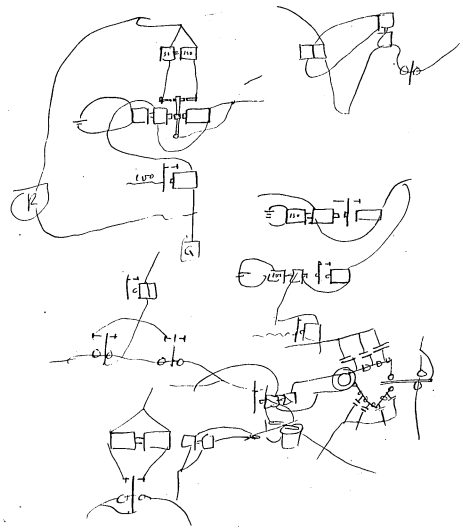
6 No. 2646. Louis F C Bregnet.
Clockwork type wheel, Escapement lever has a vibrating joint which allows a lever to do pty no drawing

1848. No 12054 Jacob Brill
Clockwork type wheel. pty by air. Described in Huffner

1857. 1183 Edmund F Barnes.
Described in Huffner One magnet working Escapement appropriated by Clockwork.
The magnets operate on lever armature operating a clapper by rotary lever & pawl
Effected same as an old House by the Clockwork

1863. 2262 Warren Thompson
Tin Clockwork one for pty alternate types on Typ. W. E. Litchfield by double polarized Magnet same as Shakellian, Newnes Cinnis pty done by mechanism controlled by motion of type wheel

85



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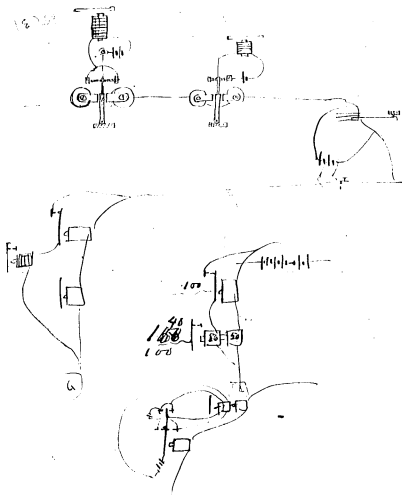

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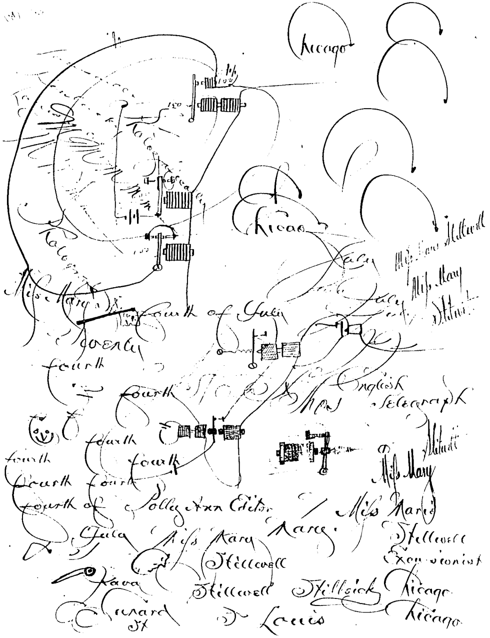
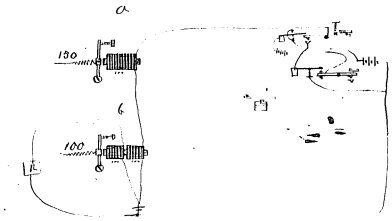
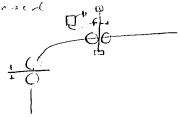
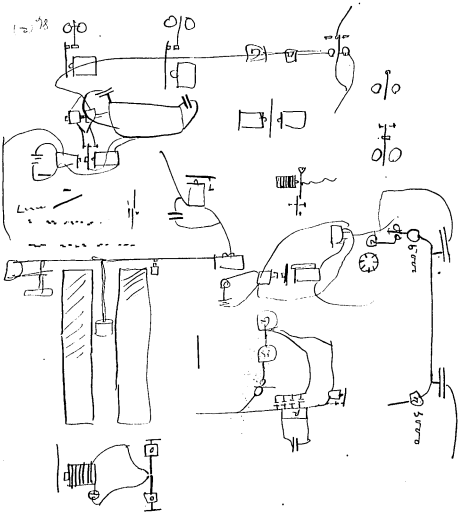

Chicago
Miss Mary
fourth of July
Polly Ann Editor
Stillwell
English Telegraph
St Louis



open b & closed.
50 P.

Dead Open. - a & open b closed.
Closed a open b
50 on a closed
150 on
open





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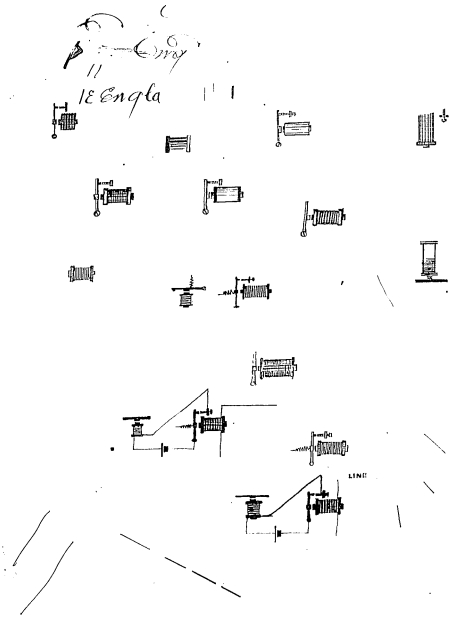

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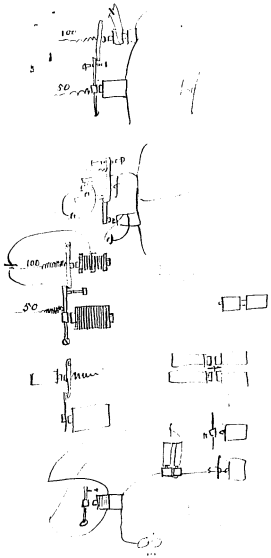

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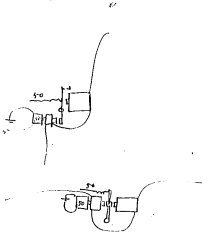


86

11

Telegraphing from one station to another on a closed ckt

By working the armature of the relay from and from like a Morse Key the Cores forming a message may be sent while the signals Current closed

86 41

86

Water Rheo 137 140 Schoeller

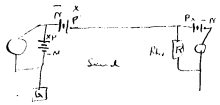
Lein Duplex device Challenger out
Bailey 398 Schoeller

Lillie. Stylus Bar perforator. 450
Schoeller

~~Bailey Battery at receiver~~

Delta page 5.38. 3.87 in a Paper

Potentiometer Cam also Bailey
in Cam - Blavier 2.95



Bonnelli - Blavier Page 505

Sends with Shunt
same as Bonnelli
Arrangement

Dam = Deut p 461

Strauss Duplex Key
No 3095 1862
Lost drawings

87

Water Rheostats. sliding used by Little
Page. 139. 140 Schellen.

Stylus Box for perforator patented by Little
Page 450. Schellen.

Adjustable. Shunt. derivation, or potential
dam. The fundamental basis of Little's System
& patented by him See Casselli pantelegraph
Blavier Page 278 also Lut. page 461.

Little's patent for short circuiting Battery
Receiving end See Casselli in Blavier
also Bennelli typo telegraph ditto Page 309
~~also~~
Leaks for discharging the line the second
point in his system. English patent 458.
1862 Lines 20. 21, 22, 23. 24.

Shunt at receiving instrument. English pat No 3095
1862. Lines 33 to 34. Leaks lines 27 to 29. 87(2)

87

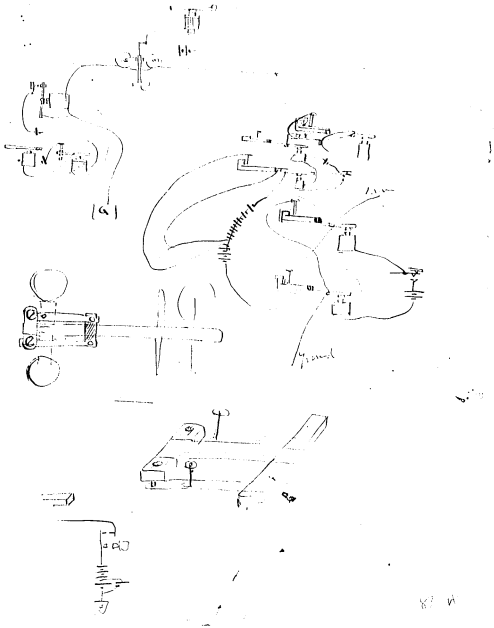
Leaks. No 206. 1860. 36 & 37 lines.

Recd condrument in deserved accounts
No 33541. 1865. 17 to 24 lines

C/ & Henley: mill Rollers pass
& Whole house
& all of little patents,
& balance down at Stamp

81.8

87



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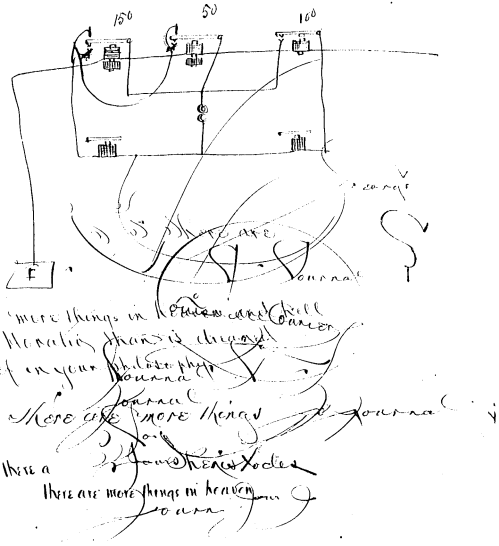
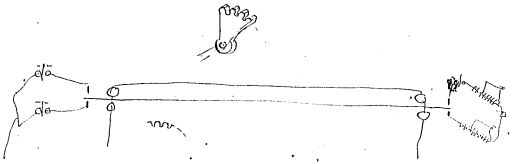
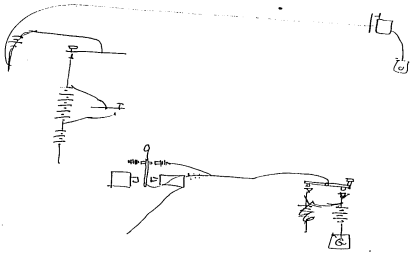

150
50
100
F
Joanna
more things in heaven and earth
Horatio than is dreamt
of in your philosophy
Joanna
There are more things
There are more things in heaven
Joanna

87

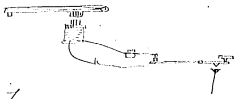




88

Chicago

Twenty



The boast of heraldry

The boast of heraldry of pomp and power all that

The boast of heraldry of pomp and power
All that beauty all that wealth ere gave
Alike await the inevitable hour
The path of glory leads but to the grave
The boast of heraldry of pomp and power

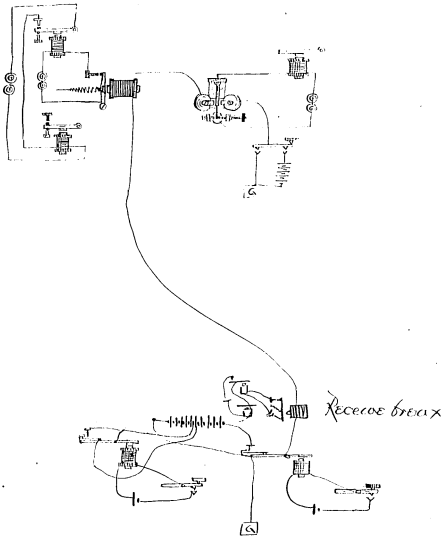
Themistocles

Diffusion

Diffusion

There were three crows sat on
a tree and they were as black

The boast of heraldry of pomp and



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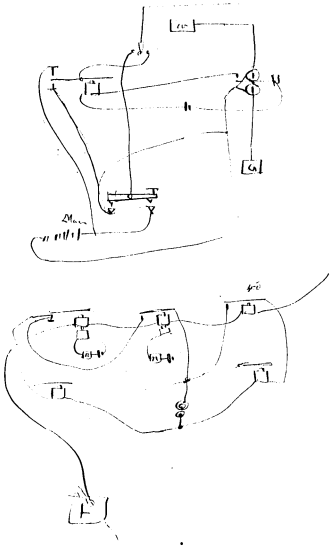

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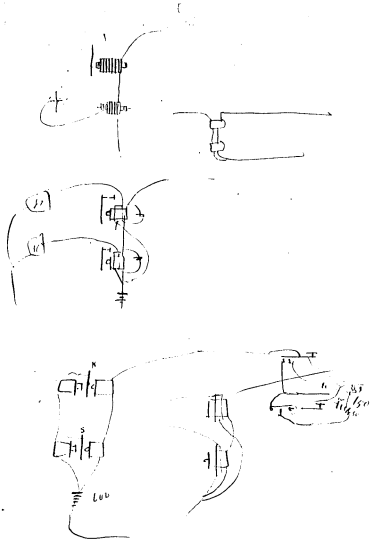

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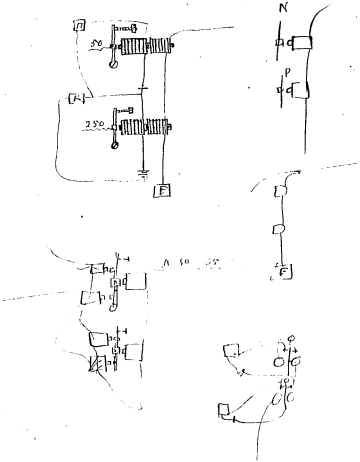
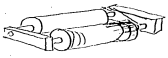


88

with fine wire with the Keeper permanently attached thus

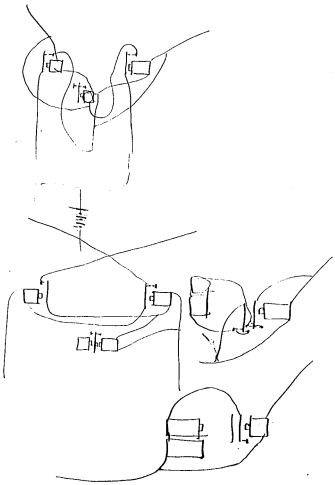


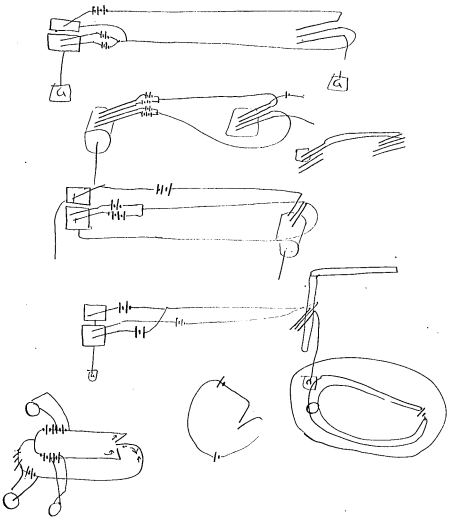
This magnet may be placed anywhere along the threaded line by the strap on the side of the Relay to which is connected the wire 4.

~~At the moment of closing the~~ m pulling on the battery B. ~~the coil inner coil~~ connected ~~is~~ the line ~~receive an impulse~~ When the battery B is connected, and at rest. the current. Effect of the current is balanced in the double helix relay. The line is statically charged and the long magnet is also charged ~~if~~ now the battery is disconnected the static charge follows passes through the line coil. and would throw it out of balance were it not that the long magnet X

89

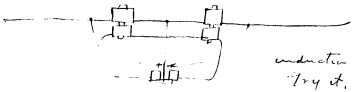
REPRESENTERS





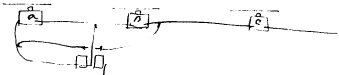
89

~~These movements cop on one circuit~~

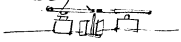


induction
try it, and some

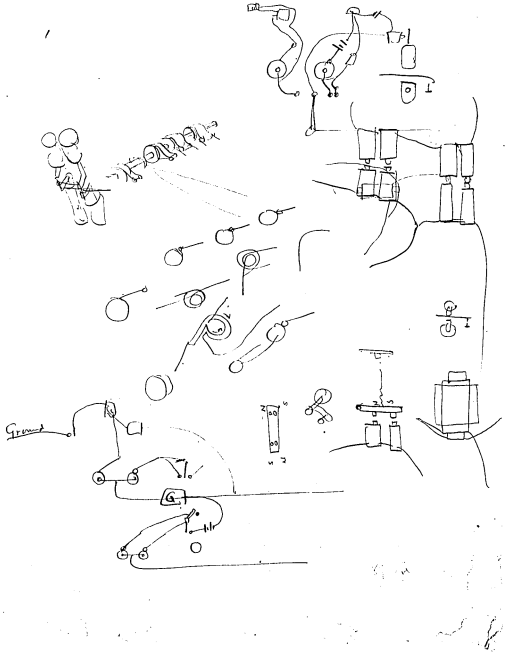
These movements are on one circuit

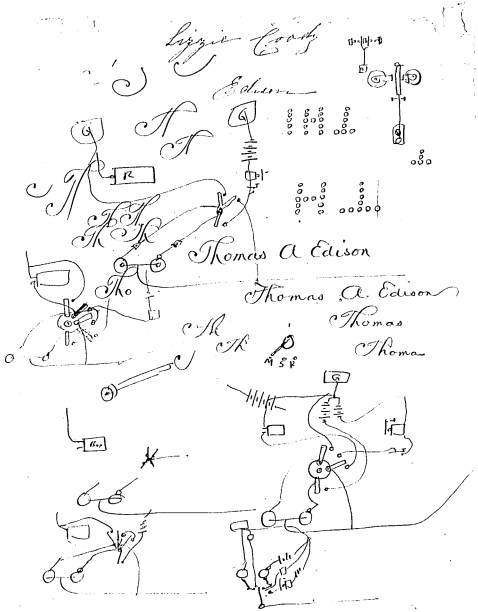


a responds to intermittent P currents
B to intermittent N currents & C
to both or by working with a P
current of 1 value & a N of higher value
both a & b will respond to their
respective currents but C to the
current of highest value Other add
= Mechanically



Second


Ground



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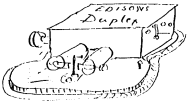
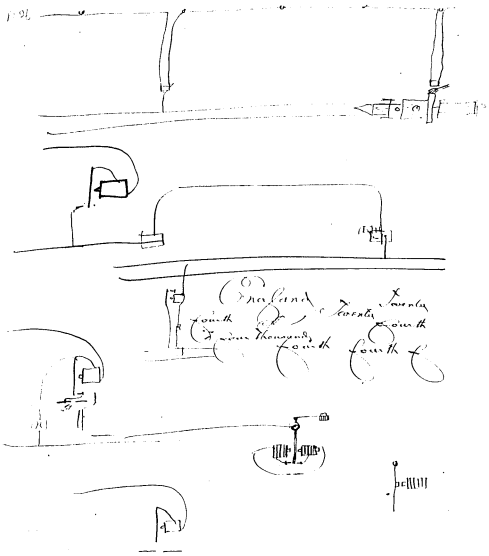

EDISON'S
Duplex



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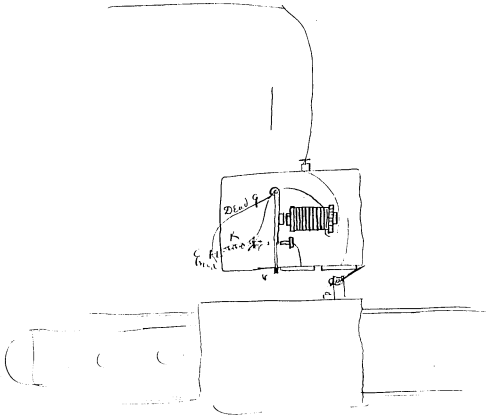


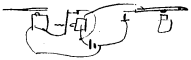
90

of the effect of a total winding hence will ~~not respond well~~ only respond to the permanent current.

Second. By sending reversals within the local circuit the magnet will not respond to ~~very slow~~ even slow interruptions on the primary circuit

Third

~~to prevent response~~

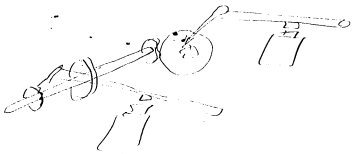


Fourth.

90

1 8 8 [illegible] Telegraphic

14.



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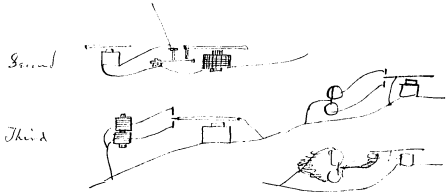
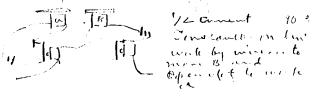
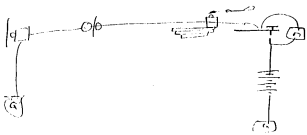


all of the showing movements as on the vibrating with local or secondary ckts

Movements by relay and secondary Circuit





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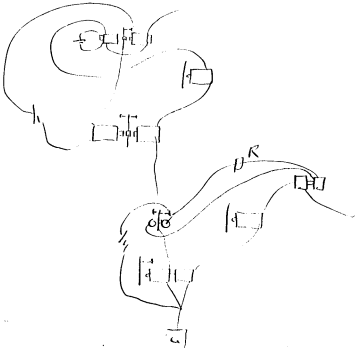

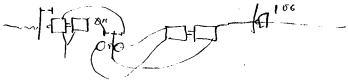

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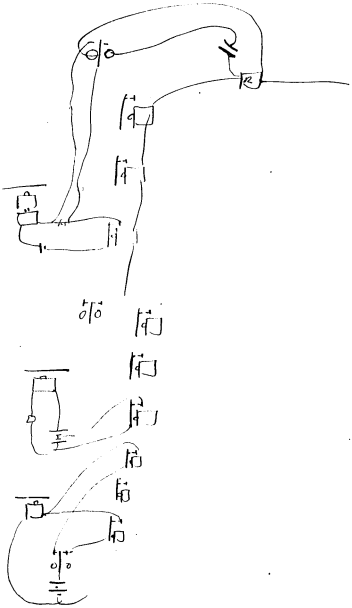

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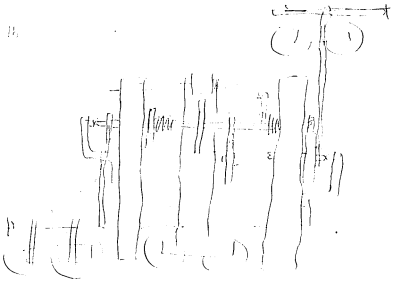
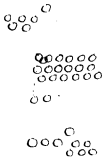


use manual op. window!
number spaced slots &
fixed =
Recirc from pool pump
through tower above so
cups & baled pulp
& impact with 10 cups
local sec speed



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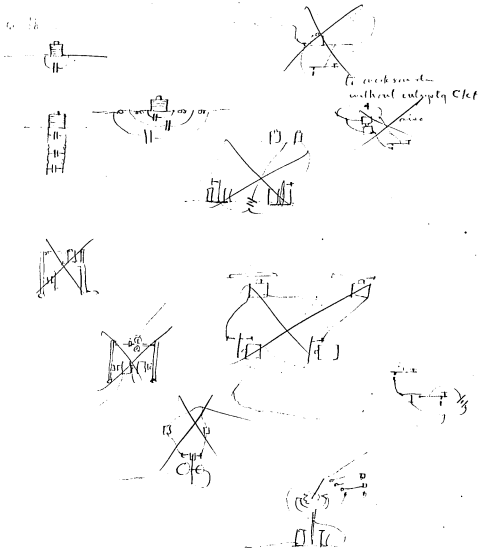

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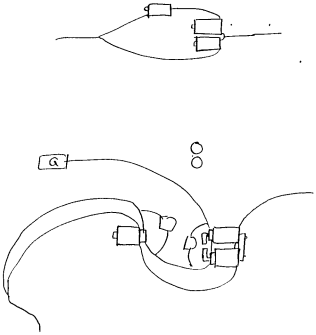

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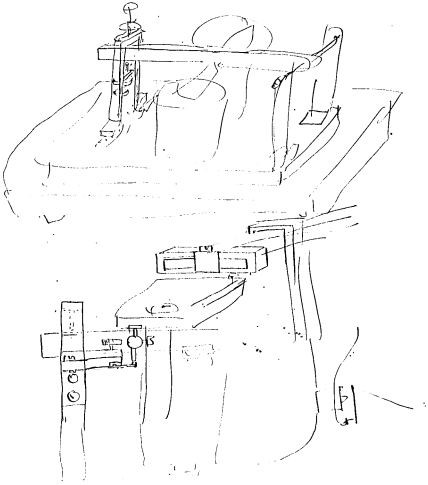

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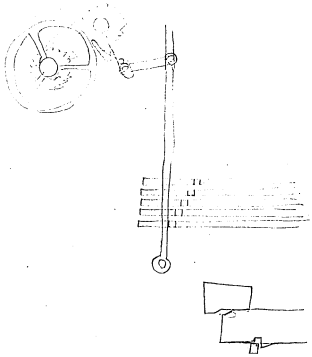
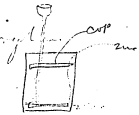
92 (5



92

92-2

also try there is there
solution well mixed &
see if it will expand
there



92.3

Pour in Sul zinc
Sul Z in the mixture Sul Cu

92

mercury water - tin foil
will not mix. color
and amalgam with bally
see first will make chem
mix

ozone point-dampness.
Electrical machine
Experiment page
101. play book
Screw jaws

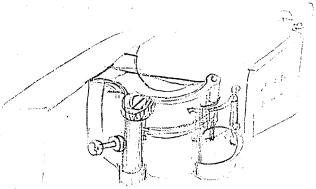
Iry. Iodl Mercury
platinum pen
also with gones

92

Pass spark through
lamp of alum
blue V.S. a fine pen
Beautifully lighted.
play book 239

Palladium pen also a
palladium reagent.
Crooke. 289

92(4)



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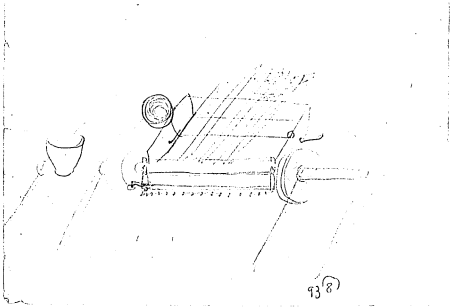


93

Sent to Mr. Cox with a description of electric precipitation of the diffusion of liquids —

Try The diffusion of different substances was two platinum disks Thus

1 Cup

Molasses Chrome Orange
" Chrome yellow
" Prussian Blue
" Prussian B + Alcohol + Saffron
+ other

Try two different Colored phosphorescents.

93 (13)

Try evaporating different chemicals on clean porcelain heated zinc to show different colors for each one — or on clean polished steel or iron or aluminum

New Reagent for Ammonia in minute quantities in water & in other cases
Crookes p 29

Magnesium on plates zinc in battery most powerful
Try it
~~The [illegible] Clay~~
~~[illegible] Glass~~

Wet it & outside of battery connect platinum wire platinum for all poles immerse in Nitric A —
~~From~~ Crookes 37 p

Reagent for Calcium
— Tungstate Soda —
Crookes 38.

Sulphide Ammonia thiocyanate
Black precip with uranium
get Uranium pan —
Crookes 55. Uranus Probably

Good

93(2)

93

with Wurman pen protox
- best with Tiers preferred
when letting with form
~~the mixture~~ Oxalate of
Ammonia will prevent
red percap —

By Zinc Expert Crowke
61 —) was get Chemical
Zinc —

Zinc pen - fine preferred
Ammonia - or Chl. Sodium
percap unsolvable by Ammonia
guess ~~to~~ white Lemon
use a Coloured paper

It is quite probable
that a ferrocyanide
throws down a ~~the~~ percap
with oxide of zinc Prot. or
per I dont know which
a zinc pen would be
found very delicate ~~the~~
possibly ferrid would throw
down a percap as under
the pen the first oxide
would probably be prot.
shorts the percap also
be white ~~the~~ of course
a Coloured paper should
be used some Dye
would Coloured is probably

93 (B)

93

The best ~~Crooks~~
for information when refer
Crooks 62

It may be that a
black precipitate
might be dissolved in
some solution that
would bleach that
and under the
action of the current
the bleaching action
discharged plating
from

Get chromium metal
from Brandeis Co.
nickel plating

Barium per-forms oxide
and the Sodium manganate
the Barium add
that a from precipitate

in regular form
associate a magnesium per
so that it will come before
the iron also after see
the effect

93(1)

93

Bromide prolongs the non
Crooks 71

Sulphonamides of non the
something Crooks 72

Some of page 73
Crooks

Calomel page [illegible]
[illegible]
Calomel.

Mercurous compounds
are a cathartic salt
← Cupper pg.

115 Crooks 5 mm per
Sulphated ~~quinine~~ - Cotte Solution

Protosulfate kept from
oxidization by placing the
with pieces Camphor in
Clean dry pp. upper
Crooks 1225

Get some Hydrofenocyanic Acid

Prussian Iron from Spain
is a ~~[illegible]~~ ~~[illegible]~~
get some for pens

93 (5)

93

Something = p 384 6 metals
p 385 –

something do p 391
" " " 393
" " 440
" 422
" 453
465

get some more of demm
470

Nickel prob. precip by
Ammonia

481 refers to
palladium get some —

Connect a table
in Newark up
all around bottom
like bubbles diagram
+ have CO sent
with No shunt
use hm Condes
see what speed
if not more than
~~150~~ good ~~working at~~
150 to work from
JCK to work from
Edent Stevens
Trustees

93 ©

93

93

get [illegible] uranium for a
pen
do Osmium

Publication Crooks, page 298
Hyp [illegible] Sodium with
ammonia gives good permanent
Color in the $\frac{1}{100000}$ part

Put some perchloride
~~of platinum~~ Uranium in
ferrous regular solution
to prevent protox. going
to a pen the salt
reduces ses go to
a protox - a

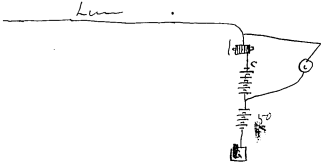
J. C. REFF, Agent.

OFFICE

Kansas Pacific Railway Company,

No. 80 BROADWAY,

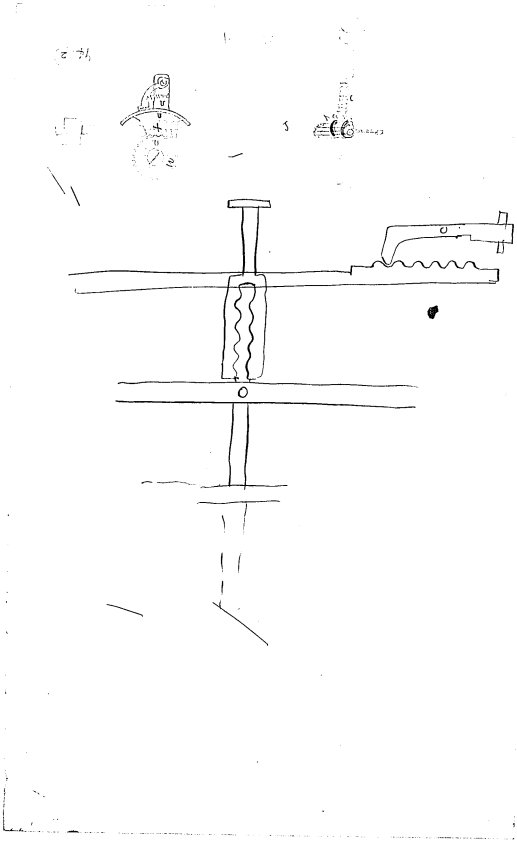
New York. 187



94

94

94



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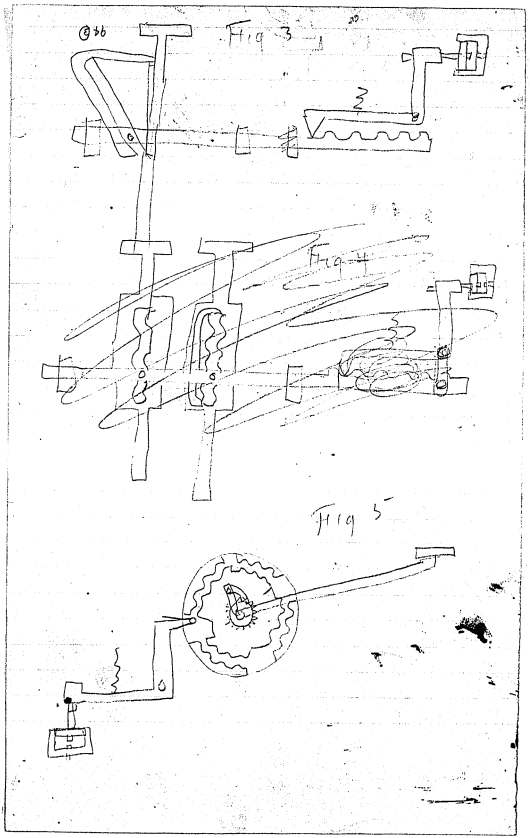
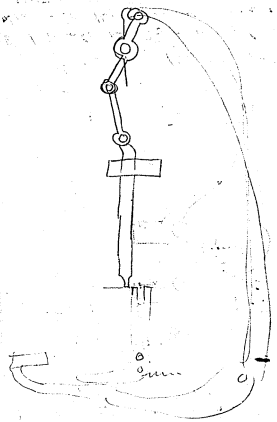


94

The principle of Whitworth's Machine

① 56



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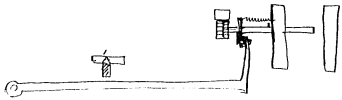

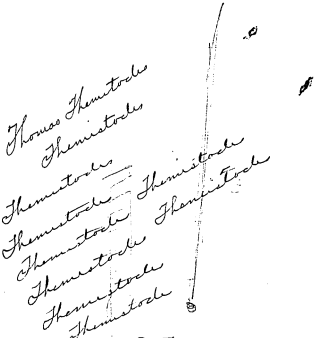
Thomas Hemitode
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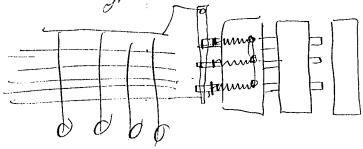

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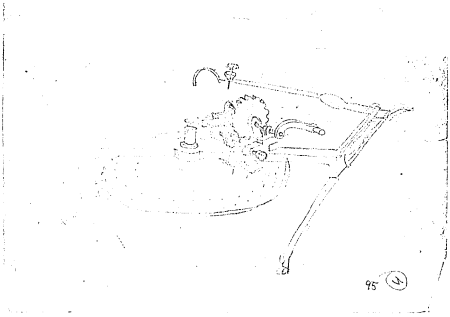
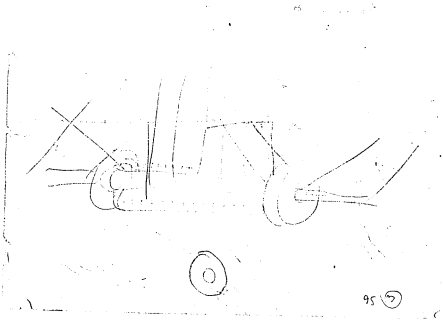
W

95 (12)





95

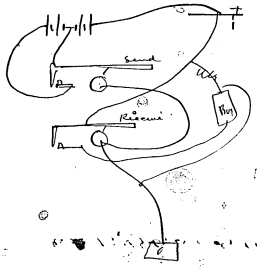
J. C. REIFF, Treas. GEORGE HARRINGTON, Pres.

Automatic Telegraph Company,

80 Broadway, Room 28.

New York, July 28th 1874

My Dear Leon

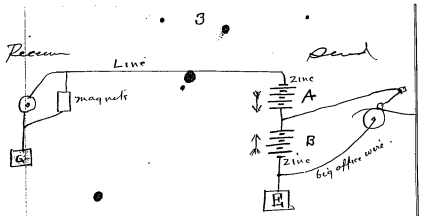


Statistics -

India Cable 1600 to 2500 average 10 wpm
Taken 1 single ~~wire~~ wire may be done at 15-W min
Russia Cable then present 7 one needing etc
has 175 Gutta Copp 180 1400 miles long
Lisbon Cab 800, and 13,450, words one day

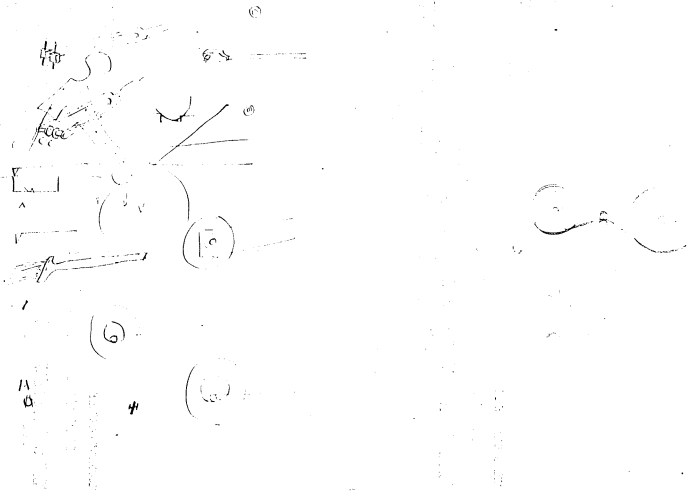
96

96 (1)



A, & B are 100 cells each alike that, put on line at transmitting

96 2



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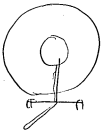

get a sight at first dust alarm instrument have a Model Made

Claim – the pivoted releasing lever.

Claim a switch in combination with the chronolin wheels clock work etc which shall select either without breaking the circuit,

Claim Concerning the electromagnets =

Claim adjustable break springs

Claim the release magnet with unison on

97 (3)

97

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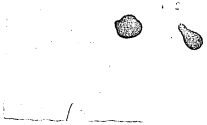

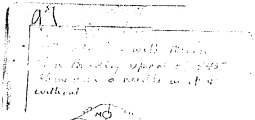

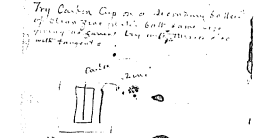

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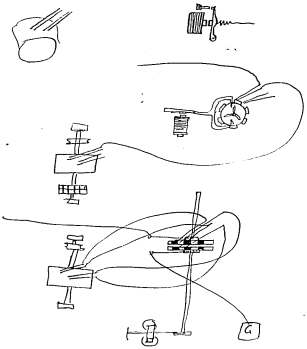

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Telegraphica.

A JOURNAL OF MISCELLANEOUS READING AND TELEGRAPHIC GOSSIP.

VOL 1. NO 4. NEW YORK, JUNE 10, 1873. PRICE SIX CENTS.

The Humming of the Wires.

BY EDWARD A. RAND.

Over the telegraph wires
  The wild wind rushes to-day,
And I catch a musical humming
  As of harpers at their play,
As of distant bells slow ringing
  At the dying of the day.

Many the messages shooting
  Along each slender line,
And it seems as if every message
  Must have left some voice behind;
Must have set the bells to swinging
  That I hear in silvery chime.

Tidings of death are they sending!
  So hushed the sad refrain!
Now it quickens, merrily quickens,
  And it peals a blither strain!
Of its joy some heart is telling;
  Ring, O bells, glad bells, again!

Here by the track I am asking—
  These varying sounds so blend—
Whether God, who wills for his children
  All events toward good shall tend,
May not hear our joys and sorrows
  In like harmony ascend.

Over the marsh by the railroad
  The wild winds sweeps to-day,
And they touch the telegraph wires,
  And a strange, weird tune they play,
Till the air is sweet with harpings
  And with church bells far away.

Charleston, South Carolina.

The city of Charleston is located on the end of a neck of land, at the confluence of the Ashley and Cooper Rivers and is seven hundred and nine miles from New York. It is laid out with con[illegible] regularity, the streets mainly crossing at right angles. King and Meeting streets are the principal thoroughfares of trade. The streets on which most of the wholesale trade is done, are Meeting, Hayne and East Bay. Broad street is the Wall street of Charleston, stock brokers, banking houses, insurance and lawyers' offices mainly occupying either side. The houses in the city are mostly of brick or wood, few being of stone. In their construction there has been displayed a lack of uniformity in shape and fitting. Most of them have fine gardens, open plots of shrubbery, shade and fruit trees. The beech and orange, creepers, vines, the rich foilage of the magnolias, the on the cedar, the pride of India, girdling the white dwellings and the green verandahs, are highly picturesque and graceful.

The oldest church in the city is St. Michael's (Episcopal), located on the corner of Broad and Meeting streets. During the bombardment in the late war it was struck by shot and shell many times. The edifice is said to be nearly one hundred years old; and its famous chime of bells, have been twice carried away. In the tower of this church two men are stationed through the night, each relieving the other every four hours on the lookout for fires. At every quarter hour through the night they strike the hour and cry out "All's well." The City Guard House or jail, opposite, has a sentinel on duty also during the night, who catches up the cry, and each time repeats the belfry watchman's song. The City Hall and Court of Records and County Court House are built of white marble, and though not large, are not unseemly structures, but rather tasteful. The Custom House Department and Post Office are in one building of brown stone at the head of Broad street and on East Bay.

One of the most prominent landmarks that strike the eye of the marine voyager, on entering the harbor, is the costly pile of marble known as the Custom House. Work was commenced on this building in 1850—twenty-three years ago—and to-day it is hardly half completed. It is of the Roman Corinthian style of architecture, and, when finishe will be a model of grandeur and strength

The principal newspapers establishments here are the *News and Courier* and *Bulletin*, the *Courier* having been purchased by the *News* recently which dates it as far back as 1732. The city, generally, is recovering from the effects of the bombardment, and the scars of war are being slowly but surely effaced. There are few public squares here, and what there are are small. Citadel square is a moderately large parade ground; City Hall square is insignificant. The Battery Park is certainly pleasant. It faces the harbor and Ashley river, and is provided with numerous shade trees and seats, and the thick grass is green and fresh. It is overlooking this Park that very many of the "aristocracy" of the city live in elegant style.

In 1861 a destructive conflagration laid waste many of the largest business blocks and private dwellings, and to this day the track of the fire is bare. Among the ruins we notice what is left of a magnificent cathedral. Marble steps, left standing here and there, also show the elegance of some of the structures which were destroyed.

Three railroads from the city, with their numberless branches, penetrate the State, north, south and west, uniting in their connections the neighboring States of North Carolina, Georgia, Tennessee, Alabama, Florida and Mississippi.

The great staple products of the State, which find [illegible] Charleston are cotton, rice, tobacco, indigo, grain, bacon, wheat, tar, pitch, turpentine and vegetables and fruit. Much of this goes to New York and other northern cities, both by rail and steamer. In the immediate vicinity of this city are grown the fine cotton of the sea islands and the largest rice crops of the United States. Many of the broad fields on which these staple products were formerly raised in great abundance, now lie barren and waste, for want of labor to cultivate.

The streets of Charleston are filled with ignorant and indolent negroes; they seemingly have not a particle of energy or ambition, and choose rather to stand around, sit around and lie around, than otherwise. It is quite as common here to see the women as the men of the colored race, smoking their pipes in the streets. They carry all their bundles, large and small, on top of their heads, and so expert are some of them that they jump and run with their burdens with ease. They will steal anything and everything they can get to carry off. It is quite amusing to see them get around a bale of cotton. A dozen will undertake to roll it over. Eleven of them will wait for the other to say ready—nobody says so. Then they will let go and each look at the other, jabbering "why didn't you lift?" "I did." "No you didn't." "You lie." And yet in their original tongue it is almost impossible to understand them. They will work after their own lazy way; but it is best not to pay them much money at once, for then you will not see them until it is all spent. And you are compelled to let them have their own way, for you cannot get white labor to replace them. If you accuse one of them of anything he will make complaint against you before a negro justice, and you are fined for it.

Nearest the city in the harbor, is Castle Pickney, which played an unimportant part during the war. Its front presents unscarred earthworks, and here are bristling cannon and neatly finished barracks. In mid-channel are the crumbling ruins of Fort Ripley, a small but strong earthwork, built during the war. Beyond are the green banks of James Island, on which stand the remains of Fort Johnson from which the first shell of the war was thrown. On the left Mount Pleasant and Christ Church, the blue waters of the Wando and Cooper rivers, and the upper wharves of the city. At Mount Pleasant there is a soldiers' burying ground, in which both Confederate and Union soldiers lie buried together with the State troops who died during the war of 1812. Mount Pleasant, during the whole of the late war, was the depot for troops and stores. There is a hotel there called the Mount Pleasant House, which was then used as a hospital.

The ruins of Fort Sumpter, which is situated at the entrance of the harbor, between Morris and Sullivan's Islands, are undergoing repairs, under the immediate superintendence of Mr. Thos. Campbell.

Fort Moultrie, located on Sullivan's Island, is being put in order for execution when necessary. Within the fort's enclosure lie the remains of the celebrated Chief of the Seminoles, Osceola, who remained a half hostage, half prisoner, from the conclusion of the Seminole war in Florida to the time of his death in the fort; not in close confinement, for he was allowed to wander over the Island. Some his admirers have erected a marble slab, surrounded by an iron railing, over his grave. We are now on Sullivan's Island, where in summer time the dwellings are all tenanted and cheerful, and the [illegible] becomes the happy resort [illegible] the lovers of sea bathing. [illegible] the Island the white sand looks like so much dirty snow; and scarcely any vegetation grows upon it, save here and there a stalk or weed, and a single clump of Palmetto tree.

Fort Putnam and Battery Wagner are on Morris Island. At the former are two or three one hundred pounder parrot guns, bearing on the city and elevated at an angle of forty-five degrees.

Before we leave the harbor, let us see what has been done since the war. Extensive operations are going on, and General Gilmore, under two appropriations of $50,000 each, has been actively engaged in having all the wrecks removed. He is also deepening the Maffit channel to a depth of fifteen feet at low water. In connection with wrecks, it may be mentioned that Prof. B. Maillefert, a French engineer and a resident of Long Island, has, under contract with the government, removed three confederate ironclads, two iron blockade runners, four gunboats and a merchant steamer; also, the United States turreted monitor Patapsco. The fate of this last vessel is not generally known. While doing picket duty during the night, between Forts Sumpter and Moultrie, she was blown up by a large torpedo, fired by electricity, and unknown to any one, she sank with all on board—not a single officer or man escaping to tell the story. She sank in thirty feet of water. The work of removing her has been very interesting. Quite a large quantity of human bones has been raised, and, by order of General Gilmore, interred at Fort Moultrie. The wire which fired this torpedo is among the trophies received by Mr. Maillefert, who has a large collection. One of the most difficult tasks accomplished by the professor was the removing of the immense iron turret of the Patapsco, which measured twenty-three feet in diameter, nine feet in height and eleven inches in thickness (eleven plates one inch thick) all battered and rivetted together. The weight was one hundred and sixty-six tons, and, the whole being found too much to raise in one body, several heavy charges of gunpowder were exploded from time to time by wreckers, but without effect, until Mr. Maillefert succeeded in breaking it into nine sections of eighteen tons or thereabout and landing all.

Study of Love.

Every body is puzzled by the extraordinary caprices of love-making. The ladies who say in novels that they can not understand "what he could see in her" are generally held up to ridicule as obviously blinded by jealously. And yet their want of perception is not only sincere, but is shared by perfectly impartial spectators. When we see the way in which marriages are brought about in the world, we wonder that the pursuit of match-making should be found so interesting by amiable persons. Of course match-making as a variety of fortune-hunting is only too intelligible; but there is a match-making of a much less sordid variety. All amiable women take the keenest delight in attempting to pair off their friends and relations according to their own views and the fitness of things. And yet they are always meeting with the strangest and, at first sight, the most unaccountable disappointments. The man of intellect has an extraordinary taste for stupid women; the handsome man of fashion is carried off by a poor ugly, and commonplace women ten years older than himself; the pompous sprig secures the brightest and livliest of her sex; fox hunters attract poetesses, and poets marry wives who can do nothin but mend their shirts. [illegible] contrasts have led to the development of the plausable theory that people are attracted rather by qualities complementary than by qualities similar to their own. This doctrine, however, fails by being too comprehensive. We must admit that like often attracts like; and if we add that like often attracts unlike, we have a theory which explains nothing because it explains everything. Every match that ever was or ever will be made may be brought under one category or the other; but until we can give some reason for telling beforehand which set of causes is likely to be operative in a given case we are no nearer an explanation than we were before. The only general rule at which we have been enabled to arrive by experience is the rather discouraging one that people whom we like always marry people whom we dislike. Friends seem to have a proverse delight in forming new combinations which may be as discordant as possible with their ties. We do not, however, see our way to erecting any philosophical theory upon this experience, unless as it goes to illustrate Artemus Ward's doctrine of the "cussedness" of things in general.

The philosopher has yet to rise who will be able to tell us from the inspection of a young lady or gentleman what will be the character of his or her future partner. Mere contiguity is very often a sufficient explanation of the phenomenon. A man and woman brought together in Robinson Crusoe's island would almost inevitably fall in love, however unpromising their characters might be. And though a city is very unlike a desert island, there are frequently situations, even in the most crowded socities, where conditions substantially similar are reproduced. There are circumstances under which it would be almost a breach of good manners not to indulge in a little flirtation. A human being has such a variety of strong feelings in a state of solution that any object will be sufficient to determine there crystallization. This is, indeed, the primary axiom on the subject. We have all a vast amount of disposable emotion; we all long to admire that its perfections are the sole cause of our worship, when, in fact, the desire to worship something; has prepared us to prostrate ourselves before any shrine that offers itself. Love being a compound of so many forces, any one who is set in action draws all the rest after it by the principle of association. But all this does not answer the question as to how our choice is first determined. A young gentleman in a large city may see some hundreds of young ladies before lie is brought down by one who is perhaps among the least apparently attractive of the whole number. That is the puzzle which is constantly recurring, and a solution of it would be of immense value to all match-makers, whether of the loftier or the baser variety. What is the most promising method of attack? Which of all the causes that may precipitate the passion is the most generally available? If philosophers could tell us that, they would have taken the first step toward placing an occupation now pursued on purely empirical principles upon the true scientific gounds.

A LITTLE INDUCTION.

When is a young lady "very like a whale?" When she's pouting.

Why is Easter no longer a movable feast?—Because it is kept still.

Why is a whisper forbidden in polite society?' Because it isn't aloud.

If you wanted to stop the mouth of a river, would you do it with a lock and quay (key)?

Very few horses eat corn-beef; but we saw one standing the other day before a store with a bit in his mouth.

Groaning beneath the weight of the good things placed upon it is clearly not one of the pleasures of the table.

At a coroner's inquest a witness was ask "What was the last thing seen by the deceased?" [illegible] it was given [illegible] "The deceased lady died suddenly, without me dical assistance, which came too late."

Punch wishes to know what is the difference between fixed stars and shooting stars. The answe is that the one are *suns* and the other *darters*.

A minister having remarked "there would be a nave in the new edifice the society was erecting an old lady said "she knew the person to whom he referred."

The mayor of a Portuguese city once enumerated among the marks by which the body of a drowned man might be identified, "a marked impediment in his speech."

A Washington doctor asserts that "bald-headed men die young." He probably confounds cause and effect, and means that those who dye young are apt to be bald.

A Vermont school-teacher has solved the problem at last. He makes unruly boys turn a grindston one thousand times, while another boy bears on it with a stick of wood.

"Who dat hit me?" "Where's dat lantern?" were the exclamations of an astonished Elmira-darkey, after being thrown something like a hundred feet by a locomotive.

An Indiana Sunday-school man writes to a firm in New York: "Send me some Sunday-school paper and books. Let the books be about pirates and Indians as far as possible."

CONSOLATORY.—Some men go round the world with their hands in their pockets. That is betters though, than if they went about with their hand, in other people's pockets.

A young fortune hunter surprised his friends by announcing that he was going into agriculture, and should commence his husbandry by removing weeds—some rich and lovely widow's weeds.

At one of the ragged schools in Ireland a clergyman asked the question "What is holiness?" A pupil in dirty, tattered rags jumped up and said "Plaze, yer riverence, it is to be clane inside."

A reporter last week, in recounting a death, said, "The deceased lady died suddenly, without medical assistance, which came too late." To die without medical assistance is hardly complimentary.

A California lion sprang from a thicket and devoured the dog of John Taylor, of Bartlett Springs while that animal was taking the air with his master. What did John say? Why, he said "Dog-gone," of course.

One rainy Sunday a number of strangers crowded into Surrey Chapel for shelter, whereupon the eccentric Rowland Hill said: "Some people are blamed for making religion a cloak; but I don't think those are much better who make it an umbrella."

"What are you drawing, Anna?" I'se making your picture." So the gentleman sat very still and she worked away very earnestly for awhile Then she stopped, compared her work with the original, and shook her little head. "I don't like it much," she said. "Tain't a great deal like you I dess I'll put a tale to it and call it a dog."

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NEW YORK, JUNE 10, 1873.

Suspended.

Ever since TELEGRAPHICA was started the publisher has labored under the greatest disadvantages conceivable. Sickness in his own immediate family, resident several hundred miles from New York, has called him home frequently of late, at no little expense. As a consequence the business which opened so auspiciously, and promised so much, has become deranged from lack of attention. The anxiety attending this knowledge, together with the burden of domestic cares, and other complications that it is not necessary to mention here, have had their effect on his own health, and it is with a weary head and disappointed heart that he announces that common discretion commands him to discontinue the publication of TELEGRAPHICA for the present. Our readers will now understand why the paper has appeared so irregularly, and why it has not been up to the standard at which it was intended to keep it when its publication commenced. In the event of a continuance being distantly removed, all money received for subscriptions will be refunded. It is not without humiliation that we make the announcement of a suspension, and we believe no one will rejoice that [illegible] little journal has ceased to be.

A Novel Telegraph Suit.

There is a very novel and interesting suit now pending in one of our Eastern States against a prominent Telegraph Company, and the result will be one of interest and importance to all connected with Telegraphic affairs. The facts, in brief, are these: A man in Canada purchased a quantity of salt in one of the American towns just across the border, and shipped it on an open platform car, and at the same time telegraphed to one of his Canadian friends to look out for it on arrival. The following is a literal copy of the message:

Montreal, May 9, 1873.
To ——:
Pleze look out for mi colt on morn frate train.
FELIX.
10 pd.

The Canadian was on hand the next morning, but the "frate" train brought no colt. In the afternoon the shipper arrived home, and found upon enquiry at the depot that the only freight which had arrived for him during the day was a cargo of salt, and that on account of not having been promptly removed from an open car it had been completely spoiled by a drenching rain. He immediately went for his friend, and asked him why he had not taken care of the cargo for him in obedience to request by telegraph. The friend told him he had received a message from him to look out for a colt, but that no colt had arrived. "Salt, I said," responded the infuriated Kanuck. "Your telegram said *colt*, was the answer, and the message was at once produced. "There it is," said the sender, "just as I wrote it c-o-l-t (salt); now, why in thunder didn't you see to it? "Comment is unnecessary, but there is evidently a Yankee schoolmaster needed in that section of Canada. The suit has been brought against the Telegraph Company in Vermont, and will be tried in July.

BOSTON.

An amateur journalist of Indianapolis has made a fortune by his pen: His ofther-in-law died of grief after reading one of his leaderes, and left him $130,000

Little Rhody.

To the Editor of Telegraphica:

I am surprised to see that while the columns of TELEGRAPHICA teem with correspondence that none of the New England cities have yet been heard from. It may be rather presumptious in me to open the ball, but I shall take the chances of being deemed "a trifle fresh" and make my offering. Though Rhode Island is not a large State, Providence is quite a city and telegraphing is one of the most important features of its business. The main office of the Western Union Company is located on Westminster street, at the intersection of Weybosset, in the building with Messrs. Knowles, Anthony and Danielson, Publishers of the *Journal*, the *Bulletin* and a semi-weekly and weekly paper. This concern being the only one in the State which has the despatches, day and night, of the Associated Press, is the chiefest portion of the lines among the newspapers. It is an immensley rich and powerful organization, receiving numerous special from all sections, and the telegraph office could not be more handily adjacent. The telegraph office is under the management of Mr. Henry C. Bradford, a gentleman who has been identified with the business since long before the consolidation of the American and Morse lines, thirteen or fourteen years ago. Mr. Bradford is, I believe, the only remaining manager in New England of the many who were formerly House operators. There were many of them at one time, but they have dropped out of the ranks one by one, and only he remains. Those who knew him ten years ago, and have not met him since, would be surprised to find him to-day looking precisely the same as then. Like old ocean

"Time writes no wrinkles"

on his brow, and he caries himself as erect and is more buoyant physically and mentally than many of half his years. He is a splendid disciplinarian and manages his office and his men in a manner, if something strict and approaching military precision, undoubtedly to the advantage of his employers. The force in his office is made up chiefly of those who have served under him as "man and boy," and is composed of as good material as can be found any where. Mr. Bradford is assisted by Mr. Albert C. [illegible] E. Gonsolve, in charge of the books. Both are efficient and valuable men, who set their fellows an example by putting their own shoulders to the wheel with zeal and determination. Mr. Charles H. Bogle, combines the duty of managing the office at night and receiving the Press dispatches. Mr. Bogle is perhaps better known outside of the State, than any of the others, having seen service on the Union Pacific Railroad, and at 145. He is a gentleman warmly esteemed here as he has ever been wherever his lines were cast. The remainder of the force is as follows: H. N. Williams, operator for the "C, N. D.;" P. J. Hurlburt assistant day chief; Albert L. Guesman, New York wire; J. H. Ingraham, day Press; M. H. Crane, Boston wire; James B. Gaynor and George W. S. Burroughs, way wires. The clerical force numbers among it, Messrs. George B. Horton, John F. McLoughlin, Henry Rothemich and others.

The opposition here is the Franklin. Its office is directly opposite the Western Union, on Weybosset street. Mr. Downes, recently from Boston, is manager. He is assisted by Messrs. C. J. Sheehan, W. H. Anthony, and a night operator whose name has escaped my memory,

The branch offices here are not numerous. The Western Union have one at the City Hotel, R. E. Capron, operator, and another in the Depot, presided over by an amiable yound lady—Miss L. M. Briggs. Several of the railroads have also offices of their own, using the Western Union wires.

I must not close with telling you of an amusing thing that occurred here the other day. A number of colored men sent a message, and while waiting for an answer seated themselves in the broad window seat with their backs to the street. It was at the time of the Modoc excitement, and one of the "traveling agents" slyly placarded on the window the legend, on the back of a blank, "Imported Modocs." Everybody that came along stopped and read the placard, looked in, saw the point and moved on with spirit gently moved. Quite a knot gathered at times until the hilarity became sufficient to attract the attention of "the boss," when he at once removed the cause of their merriment (the card, not the darkies.) In point of fact, nothing could remove them until they got their answer, which was late in the afternoon. They were so much engaged in discussing the ithics peculiar to the Ethiopian mind, that they were oblivious to the merriment of which they were the object, and will probably go down to their grave innocent of ever having personated the scalp lifting savages of the lava beds.

WHAT CHEER.

Providence, May 29, 1873.

Postal Cards.

To the Editor of Telegraphica:

If I could meet "Old Soldier" from Utica, I would say "Put it there." Why? because I always feel like taking a man by the hand that agrees with me. Let every telegrapher send in his "mite" and we will have one of the livliest papers published. Here in our "city of brass" we have a mixture of all kinds of customers, from one that wishes "Threa hundred feat ruber hoze to-day shure as I been suno rady," to the one who wants "my deer brudder, come rite away hom quick mudders hed akes so much I feal she goes ded, anser." As that is an every day occurrence with us all, I will not dwell on it; but here comes a sort of ignoramus who has heard a little about the postal telegraph and hears postal cards has been issued. He awaits anxiously for their arrival and on hearing they have come to town purchases one, writes a message and sends it to the telegraph office by a boy. On telling the boy the message would cost 35 cents he looks rather surprised, and says "it goes for that." "Tell him not bad" I answered, it will go by mail for that, but not by telegraph." Well my boss knows," he says, "send it by telegraph for that." After a little explanation on my part, the boy promises to bring the money in the afternoon. I sent it at my own risk, and I have got the 35 cents, that is, I've got it to get. But we are taught to forgive our debtors as they forgive us, so I'll stand by that until the Morse alphabet is changed and then I'll collect it.

B. C.

[illegible], 1873.

Further from Cincinnati.

The following are the arrivals at Cincinnati:—H. M. Geeway from Omaha and F. M. Shiffers from Memphis. The departures are L. W. McCarthy for New York. S. H. Huxford to embrace agriculture as an avocation, in Indiana. S. T. Schaefer, a genial gentleman of culture, to travel Northwest with an eye to a mercantile location. T. N. Foster, the unique humorist, to take a position in the St. Louis office, leaving behind him many quaint sayings, and C. H. Sahell an agreeable young man of generous disposition for Canada to summer there Mr. Sehell loaned money to the mo unreliable applicants with such alacrity that they always paid him back—and borrowed more largely the next time. Albert F. Plank for home in Northern Ohio, having amassed a collosal fortune by telegraphing. Mr. Plank is the wealthiest man on the western hemisphere, or any other hemisphere in the United States. He constantly carries a roll of bank notes larger than all the messages he sends and receives in a day, would make. Plank does not become bored by allusions to his financial greatness. He is a pop'lar plank.

S. Evil Jones is a young man whose sweet, unsophisticated smile irresistibly recalls the backneyed quotation "child-like and bland." He presides at the Columbus wire with a native grace, and gentleness seldom equaled and is very regular at his meals. Mr. Jones and an Italian gentleman named Schwack were floor managers of a *recherche soiree dansante* recently given at Workmen's Hall which lies beyond the Rhine. It was the most brilliant social event of the season [barring the opening of the First Ward House on Sycamore street.] Mr. Jones abstained from labor on the succeeding day, owing to nervous exhaustion caused by the responsibility attending this onerous position. Workmen's Hall is not where the Prince of Wales was given a ball when he visit this city. Mr. Jones wears a Half Rate moustache and is fond of music, frequently crossing the Rhine these summer evenings to satisfy his esthetic taste in that direction. Jones never goes back on his friends.

Monsieur P. Jymnasium Foley has the blackest moustache, for his weight, of any man in the business. Mons. Foley takes three baths per week and sends good Morse. He is also proprietor of a mammoth aggregation of wild animals, which he keeps at his residence in Newport and calls an Equescurriculum. This collection consists of a Kentucky red-bird and an American raccoon. It is proper to state however, that the raccoon was recently stolen, so the menagerie is less numerous than it formerly was. Mons. Foley converses fluently in the Celtic tongue and has an enormous appetite. Mons. Foley's first name is Patrick, which indicates his nativity He is a Frenchman and a Communis His favorite literary work is "The life and Adventures of Dr. Rattlehead, the Arkansas Doctor." Mons. Foley can quote whole passages of this classical volume.

G. Oglethorpe Morse has been telegraphing only eleven months, yet he can imitate all manner of wild beasts and domestic animals with surprising accuracy. His *chef d'oeurre* or "best holt" is the granting swine, but the whinning, horse, the rampant bovine and the exhilerated donkey are also very artistic. Manager Macauley of Wood's Theatre endeavored to secure Mr. Morse's services as a wolf in Frank Mayo's drama of the "Scouts of the Prairie" but the parties could not agree on terms, Mr. Morse demanding a share after half and six clear benefits per week. Mr. Morse is a skillful penman and pays his board regularly.

ABNAZAR.

MORE NEWS FROM BUFFALO.

To the Editor of Telegraphica:

I rather admire the pen portraits given by your Pittsburgh correspondent in a former issue of your peppery shee and in imitation thereof, I propose, with your permission, giving you a few photographs of the most prominent "high fliers" in this vicinity. One would never have known there were so many of the finest operators in Pittsburgh, had not your rrespondent given in his testimony co and I would say parenthetically, that I could run up a list to twice the length of his, of those in this office who are "only waiting" for some kind friend to publish their obituary—I mean qualifications. Here am I then a volunteer. They shall no longer, like the roses, "blush unseen," but the whole world of "Telegraphica" hall know of their hitherto unrecognized talents. Speaking of roses reminds me that we have four of them in this office. Their names are Miss ——, Miss ——, Miss ——, Miss ——. You may perhaps have heard of them. They are "thorns in the side" of a few of our "Dandy Jims," a number of whom are complaining of the heart disease (?) and want a furlough!

But to return to our subject. On entering the book-keeping department we find a dignified-looking individual, who can tell a bigger yarn, on shorter notice than any man in the State. He is a bookeeper, temperance orator, newspaper correspondent and general utility. He was originally a partner of the firm of "*Medes* and Persians" whose advertisement appeared many years ago. When sitting at his desk there is Ridge directly in front of his nose, and in the same room there is a chap with bushy eyebrows, bushy hair and Bosche everything. There are likewise two bees, B-issell and B-arker, who are always engaged either tending to business or getting up a raffle.

We now ascend several flights of stairs, and in course of time, would reach the roof. But unless acquainted with the battery men, who do not like to be disturbed, it were wiser to stop one flight short of it where from the continual clatter, an operator would know at once, where he was. Any one else would think of falling bricks, and run out and get his life insured. A single glance into the operating room would reveal in the neighborhood of four hundred and forty-two operators, all first-class. An hours' sending to them would reduce the number by four hundred at least. If he wasn't busy, Laird would jump up and tell you of something which happened before the war, and Joe Larish would ask you the difference between a salt box and a box of salt. If your ears were open you might hear Anderson requesting some one to "have Cincinnati adjust been trying to break him two hours." Although Davidson would think he had succeeded in doing so several times in half that time. O'reilly consumes acres of valuable time composing love ditties, and in contemplating a postal card, which puts him ill at ease. Corcoran keeps figuring up how much there will be left out of his salary at the end of the month, unless he eats more and drinks less; and Wilson is deliberating whether to accept a position with the Athletics of Philadelphia, or to get up a repeater without magnets!

But here comes the "Chief." If I am caught writing he will think I am not well, and send me home. I must finish up the other boys next time.

Yours,
O. B. SEWER.

Buffalo, New York, June 7th, 1873.

SCINTILATIONS ON CITY CIRCUITS.

We all know and freely admit that to be a telegraph operator is the acme of earthly bliss. Of course city line Directors of the Electric spark are not supposed to have attained this blissful state of existence; it is only the high toned press operator who condescends to wag the key at 145. He is the only one. And yet city line operators dare to live, nay, I have even heard it asserted that they enjoy life, while one of my friends has been rash enough to declare that they perpetrate jokes. A joking city line operator! Who ever heard of such a thing? My informant bases his charge of their joking propensities upon the following narrative of fact:

"I happened to be in the vicinity of the St. Nicholas Hotel one night, about nine o'clock, when I thought this would be a good chance to study the habits of that class of our fellow citizens yclept: 'city line operators'! So I strolled into one of the offices in that vicinity, and took notes.

The first glance was rather disheartening to a person of my prejudices. There were congregated in the office four very [illegible] gentlemen engaged in conversation. The smoke from real Havannas curled gracefully and lingered caressingly about their aristocratic brows. If I met them on the street, I would have come to the conclusion that they did'nt know the difference between a pony sounder and a hobby horse. Their department was graceful, their gestures elegant, and their whole appearance betokened high tone.

The following fragment of their conversation, which I overheard, will prove my charge to be well founded:

"Yes. That is a nice hat. I like hats. By the way, Mac, why are you like that hat?"

"Pass."

"Because you're a plug."

"I am complimented. There is a hidden glory in that title which has a peculiar charm for me. I've heard that one of the lady operators has written a book. Is that so?

"It's no such thing. She had only written a Page of it when her subject became so Marsh—y that she had to seek inspiration in some of Burton's X. X. Despite her wooing, the inspiration failed to come, and thus the matter stands at present."

"Her failure will have many Grievers."

"Say, Grove, have you heard the new Conundrum?

"Probably. What is it"?

"Why are our interesting city wives like a lawyer and his client?"

'Because they can't climb a tree? suggested one.

"No. Because there is generally a male at one end, and a fee male at the other."

"Horrible! I want to go home, say, Dan, pull out these plugs, please."

"There, one of them dropped on the floor."

"Yes, I see it. That's not the only plug on the floor, though."

"No personal remarks, please."

After that last remark, I thought it was about time for me to move on, which I did, repeating these beautiful lines of Shakespeare's: "Can such things be and overcome us like a summer cloud without our special wonder?"

Further deponent saith not.

R. J. C

MEGOHMS.

Miss. Jane Butler is manager of the Lake City, Minn., Northwestern Company's office.

Mr. William M. Spink has accepted a situation with the Pacific and Atlantic Company at the main office, Chicago, Ill

Mr. Harrison Garner has resigned from the Western Union, Chicago, Ill., office, and accepted a position in the main office of the same company of that city.

Mr. Joseph Harris has been appointed Division Manager of the Pacific and Atlantic Company, St. Paul, Minn., *vice* Dennis, resigned.

Mr. Henry Burrell, of the day force of the Pacific and Atlantic office at Chicago Ill., has been appointed night manager of that office in place Mr. Fortier.

Mr. G. A. Hall has been transferred from the Pacific and Atlantic, Dubuque, Iowa, office, to the Chicago, Ill., office of the same company.

Mr. Fortier, night manager of the Chicago, Ill., office of the Atlantic and Pacific Company, has been promoted manager of the Chicago Board of Trade office of that company.

John Hemmens arrived at Bristol, England, sound in flesh and limb, on the 30th ultimo. They have got the vessel that took him over in the dry dock, but no parted seams seem to be apparent.

Mr. G. A. Northrup, formerly telegraphic operator of the Detroit, Lansing and Lake Michigan R. R., has been appointed superintendent of telegraph and chief train despatcher of the same road.

Mr. Eddie Dennis, manager of the Pacific and Atlantic St. Paul, Minn., office has resigned, and accepted the position of night manager of the Atlantic and Pacific Co., at Chicago, Ill.

Mr. S. S. Garwood has resigned the superintendency of the Western Division of the Pacific and Atlantic Telegraph Company, having accepted a position on the Western Union Company at Philaphia, Pa.

Mr. E. W. Dennis has resigned his position as Division Manager of the Pacific and Atlantic Telegraph Company, at St. Paul, Minn., and accepted a position with the Atlantic and Pacific Telegraph Co., Chicago, Ill.

Mr. Roger B. Pearson, formerly manager of Pacific and Atlantic, Baltimore, Md., off[illegible] has been appointed district superintendent of the western division of that company, with headquarters at Chicago, Ill., in place of Mr. S. S. Garwood, resigned.

Mr. E. C. Remer, Jr. has resigned his position with the Southern and Atlantic Telegraph Company, at Charleston S. C., and accepted a position with the Atlantic and Pacific and Franklin Companies, at No. 11 Broad street, New York.

A bam gag in which the select nine of No. 145 participated, was played at the Elysian Fields on Wednesday lest. The chief features of the game were a home run made by Charley Mixer, and a "busted" thumb sustained by Jack Riley.

THE P. R. & P. T. CO.

To the Editor of the Telegraphica :

Seeing your assertion that you were very willing to do the publishing and let the boys do the "Chinning" I thought I would try my hand at a little description of the boys on the P. R. & P. T. Co. otherwise Philadelphia Reading and Pattsville Telegruph Company. I am not like your other correspondent doing things for "rocks" unless it is "*Rock* me to sleep Mother" which I will sing after this appears.

The P. R. and P. T. Co. is one of the institutions of Pennsylvania and employs somewhere in the neighborhood of 350 to 400 operators, In this city we have for Manager of city offices Mr. O. W. Stager, a young man of engaging manners and indefatigable energies. In his office are Messrs Griffin, Dengler and Clark all first class "snatchers." At one other main office managed by "Bob" Crockett another of our "stingers." Jesse Griffiths hangs out his shingle. The girls can't resist looking in that window to see "Garvey" pound brass. Then we have Davy Ross and Gammung Hope at our Depot office along with Al. Ruddack and M. J. Kelley. Al is the boy who run the P & A city wire but struck about two years since and has been working for the Reading ever since. Davy Ross as he is familiarly known is one of the old timers having worked at his biz seventeen years in the same office. Over on the P G & Ch. Branch we have Mr. F. Schaefer as operator all alone. Frank is a fine boy and knows the ropes. Don't tell him I said so though. The operator at Columbia avenue is a thorough gentleman and sells tickets to the ladies with a grace irresistible. He answers to the name of Willow. At the Junction our young friend Murain officiates at the key. He has been lately relieved from the tuition of Brother Crockett for which he is truly thankful.

To return at the main line at Belmont. Brother Parkschucks lightning to the utter discomfiture of the barbarians on the connecting railroad at Conschosocken, Friend Ramsey is manager while at Phoentxville our old time friend Keeley is the genius who controls the magnet. At patterson our one legged Friend Warren Mentzer is manager of himself and his unruly brother Joe the assistant Despatchar whose various inconsistencies "makes countless thousands mourn." Warren has lately taken unto himself a wife and rumor has it selected a lady of grace, refinement and amiability unsurpassed in Patistorm. As business calls I will close by informing you that the Superintendent of this band of brothers is Mr. C. T. Sellers and he is very much liked. More anon.

Yours,
REDDY THE BLACKSMITH.
PHILADELPHIA June 7th 1873.

ONE FORTY-FIVE.

Jack Spalding (Sd) is happy. He has got a regular day job,

Thad. Stevens (60) is happy. Thad. has got a regular day job.

Mr. Jersey Jackley (Y) is happy. He has got a regular day job.

Mr. John Ashhurst, (As) the bold Briton is happy. Ash. has got a regular day job.

Mr. Rector, (Fa) is happy. Frederick has a regular day job.

Er. Gib. Menill (Dm) succeeds Mr. Spalding on the New Orleans wire. He ought to feel happy and we trust he is.

Mr. Frank Peters (Pt) wields the brass on the Erie no more. When we last saw him he was turning his face toward the Quaker city.

H. J. McCormick (Mk) from Oswego N. Y. has accepted a position on the regular night force.

O. F. Stowe (So) from Cleveland Ohio, has accepted a position on the regular night force.

W. J. Burns (Bs) from Canada, James O'Brien (Ob) from Buffalo N. Y. and F. Warrin (Fw) from Troy, N. Y. have accepted a regular day job.

Jack Stevenson is happy. Jack has, got a regular day job.

Charlie Hildreth is happy. Charlie is promoted to the position of operator. He makes the office boys stand around peculiar to himself.

Sam. Bogart is happy. He has had his hair filed, sand papered and singed

W. P. Philips of No. 145 has gone home to recuperate his health.

Mr. H. McGonegal formerly manager of the Western Union's office at Fulton market, but more recently engaged at No. 145 has gone with the American District and is the manager of their Broadway office opposite the St. Nicholas Hotel. We doubt if that company, wel supplied as it is with sterling good men, has a more faithful and zealous worker in its employ than the genial "Mc."

BORN.

HOTALING.—At Chitopa. Kansas, 18th ultimo a son to BENJAMAN S. HOTALING.

DUPLEXED.

RAND—YOUNG. In Portland Me. 20th. inst., by REV D. H. HANNABERG. EDWARD W. A. RAND, to Miss ANNIE M. YOUNG, of Augusta Me.,

DOWNER—BOHANNON, In Chica Calfornia by REV JESSE WOOD. 7th. ultimo MR. JOHN A. DOWNER to Miss LIDIE BOHANNON. all of Chico

DIED.

RYAN—In Pittsburg , 23 ultimo, after a brief illness, Mallchi J. Ryan, operator in the Western Union Telegraph office, in the seventeenth year his age.

It is said the Tycoon has started daily paper in Japan, and announces on the start that he will behead every ablebodied Japanese who does not subscribe at once. And native merchants who do not advertise have their property confiscated. This is a new way to work up a list of subscribers and make a paper pay.

Quotations from the Gold & Stock Telegraph Company, 61 Broadway.

A base ball nine is being organized in order to increase the force of cripples.

Schutt fell down and stepped on his knee-cap, while chasing a small dog down stairs. He now sports a cane and has been sent up for repairs.

Waring has gone into the shop to have a hole drilled in his skull, so that jokes will more easily penetrate to the brain.

Spinning having been detected greasing his boots with watch oil, the Company propose furnishing him with gum shoes on the score of economy. Great efforts are being made by the different India Rubber Companies to secure the contract.

Frank Lyon has nearly ruined his eyesight in trying to read the copies from the Cotton and Produce instruments.

Billy Wood denies the current report, that he has a clean shirt. It was partially true when the manuscript was sent to the printer, but when TELEGRAPHICA appeared on Saturday the story had no apparent foundation.

Folsom has been on the sick list for a week. We fear he is seriously ill as he did not appear on pay-day.

D. B. S. is happy in the discovery that the American District Co. has a microscopist, and he was once an Inspector.

Collin's ink rollers are a nine days wonder. He is still confident.

The following "Special Complaint" has been received and referred to the proper officer:

OFFICE OF JOHN SMITH,
BANKER AND BROKER,
No. 39 1-2 Broad St.

New York, May 25th, 1873.

DEAR SIR:

During the last year, your Stock instrument in my office, has until the past few days given me complete satisfaction, and I believe I have on every occasion paid my bills promptly upon presentation. In return I merely ask that you will again endeavor to do by me as you have done heretofore, and I accordingly call your attention to the following facts:

On Wednesday last a huge six-footer strode into my office, as if on his way to a fire, and without asking any questions took the globe off my instrument and commenced whirling the ink wheel. I inquired what he was doing, as my curiosity was somewhat excited.

"I think Number 3 inker is a little eccentric," he replied.

"Well what if it is?"

"Then it must be taken off."

"Young man," said I, "if it is eccentric, take it off at once. I had an uncle once who was very eccentric, and when he was taken off, I fell heir to half a million.' He took a note of my remark in his memorandum book. I returned to the perusal of my paper, but was startled by a hideous clatter. It sounded like a knife factory struck by lightning.

"What else do you wish to ascertain?" said I.

"I'm trying to make this push-dog jump out of the ratchet," he answered.

"I have trained a great many dogs my friend, but I always begin by coaxing and gentle treatment. If you can't make him jump by mild persuasion touch the bottom of his hind foot with a hot poker. Your injudicious pounding is liable to break his back."

This suggestion seemed to gratify him, for he smiled audibly as he made another note in his book. Again I resumed my paper, but for the third time I was interrupted by this young man who was apparently endeavoring to stand on his hands, on the back part of the instrument.

"Well, what is going on now," I inquired, a little nettled by this continued annoyance.

"I think this press magnet is a little too high."

"You are a pretty heavy man," said I, "but I don't think you can overcome the resistance of that magnet. If it is absolutely necessary that you should lower it however, the janitor has a crow bar down in the cellar with which I think you can start it." He turned to me with a look of blank astonishment, and actually asked me what I knew about the resistance of that magnet. "I can give you no actual figures" said I, "but judging from its construction I should say it would resist a strain of 500 pounds."

"Oh yes, yes;—I misunderstood you. It's all right," and with that he again began hammering.

"What's up now?" I asked.

"I am trying to see if the dots punch through into the pad."

I could stand it no longer. I arose in my wrath, and I told that individual I would punch a hole in his head if he didn't dust out of my office instanter. In his hasty flight he dropped his memorandum book, which appeared to be a kind of pocket directory, and opposite my name which appears on the forty-seventh circuit, I found these remarks.

John Smith. Instrument dirty. 2 and 3 inker: worn eccentric. Both type wheels dirty. No. 3 tail taking dog too short. Lower feed-dog dull. No. 2 and 3 push-dogs jump out of ratchet. Prints dir ty copy. No. 1 and 2 binding posts loose. Pad wore out. Dots too high.

It will probably not surprise you to learn that my instrument has failed to work perfectly a single hour since the visit of this Inspector. How it ever worked at all while all these troubles existed in it, is "one of those things that no fellah can find out." You will doubtless appreciate the importance of furnishing me with a new instrument at once, and greatly oblige

Yours truly,
JOHN SMITH.

Worrying John Chinaman.

Calafornians, reviving their slumbering animosity against the Chinese, are virulent in their opposition to any further immigration. Further than this, the old ruffianly spirit of abuse seems to be spreading, and the timid foreigners are greatly alarmed. The people of San Francisco, at least, withdrawing their attention from the problem of Chinese cheap labor, are considering John Chinaman as a local nuisance. According to the census of 1870, there are in San Francisco 25,983 Chinese, of whom the greater part are men. The better class of these live comfortably and decently; but the vast majority are housed in close quarters. Their home education has not been favorable to fine ideas of cleanliness; and they have come from a land where a teeming population divides living-space into the smallest possible individual allotments. Whatever may be said of the diet of the Chinese in America, it must be confessed that their domiciles and dormitories, where they have their own way, are vile and crowded. When a party of Chinaman are settled to work in a building originally fitted for the use of white people, the first thing they do is to set up at least one additional floor inside each room of fair light. Into these hives the busy workers are crowded, layer above layer. While ten Chinese are at work at a laundry-table or cigar-rolling bench, ten more are stowed underneath—to sleep; and they do sleep, strange as it may seem. Multitudes of Chinamen are employed about the cities in daily labor; but they all prefer to go to their own quarter at night to gamble and to sleep. For the accommodation of these, lodging-houses are constructed in buildings which have been abandoned by the white population; and in bunks like coffins, piled from floor to ceiling, the easy-going Celestial reposes as tranquilly as though he were in the most commodious of apartments. Some of these nests are underground; some [illegible] houses, from all of them the air is carefully excluded, and the aroma of China is over them all. Further description is superfluous.

Society (and plenty of it) in his slumbers is one of John Chinaman's pet weaknesses. His pigtail is another. The long queue, half silk and half hair, which hangs to his heels, is the Chinaman's national badge. He will bear kicking or spitting upon with meekness; his pigtail is sacred; to lay hands thereon is to insult the entire population of the Central Flowery Kingdom. But more than cheap and populous quarters, and more than his cherished queue, John Chinaman desires burial in the land of his fathers. No Chinaman so poor that his mortal remains may not be sent to rest in his native land. The wild barbaric system of religious superstition which directs the daily forms and ceremonies, omens and observances of the heathen Chinaman is called "Fung-Shuey." Just what "Fung-Shuey" is no Christain man can tell; but this mystic power compels every son of China to leave his bones to molder in his native soil or be forever a spiritual wanderer up and down the face of the earth. Poor John can contemplate death or even annihilation with a smile; but his shade must rest with the shades of his ancestors. From the Son of Heaven down to his lowest subject this cardinal principle of belief is respected implicitly. Every Chinaman who leaves his native land under contract for service or labor has solemn assurance that his bones shall come back if he dies abroad. The promise is kept, and the export of dead Chinamen, gathered from all parts of the State, is a considerable feature in the commerce between California and China.

With almost one fell blow, the local authorities of San Francisco have struck at this three-fold trait of national character. It is enacted that every Chinaman shall have not less than five hundred cubic feet of air to sleep in; and it is proposed to cut off the pigtails of all Chinamen confined in the county jail, and to prohibit the removal of dead bodies to China. The Chinaman refuse to pay fines when arrested for violating the city ordinance relative to the amount of air to be allowed to each sleeper. They are found sleeping in rooms which give about 200 cubic feet of air where the law requires 500 feet; they go to jail their queues will next come off; and, by a refinement of legal cruelty, every Chinamen will thus be made to pass through the prison and come forth shorn. John Chinaman, confronted by the dreadful apparition of his ghost lone-wandering and lost in a barbarous land, will fall into dejection and refuse to stay in a country which has no available ferry-privileges across the styx.—*New York Tribune.*

Crossing the Atlantic in a balloon.

To cross the Atlantic in a balloon has long been the dream of all ambitious aeronauts. No one has yet made the attempt, though many thifty persons have promised to do so and thereby made much money out of the credulous and curious. It was only necessary to have a vacant city lot, and a large second-hand balloon, and to send out advertisements announcing that the balloon in which "Professor" Smith proposes to cross the Atlantic would be exhibited for a few days only. Of course the public paid its money to see the balloon which was to make so novel a voyage, and soon as public interest in the matter began to decline the "Professor" quietly returned the balloon to its owners, and went to Europe by steam. This has been the unvarying history of all promised balloon trips across the Atlantic, so that the intelligent person who now hears of a new project of the kind immediately decides that the so-called aeronant is an imposter, who has not the slightest intention of keeping his word,

There may, however, be reason to put some degree of faith in the two aeronauts who have recently promised to start in a balloon from Boston for Europe on the Fourth of July next. The Aldermen of Boston fully believe in them, and have proved their faith by giving them $3,000 to aid them in fitting out their balloon. Of course this money did not belong to the Aldermen, but to the Municipal Treasury, and hence it was given away more readily than it [illegible] had it been taken directly from the Aldermen's pockets. Nevertheless, it may be assumed that no New England person wastes even the money of other people upon unprofitable and absurd projects. The Boston Aldermen must have felt certain that the aeronauts really would keep their promise, or they would not have given them so large a sum of money. We may therefore expect, with some little confidence, that on the coming Fourth of July the first trans-atlantic balloon will start from Boston, amid the roar of the great organ and the shouts of the assembled mob of transcendent philosophers and descendants of John Adams who are supposed to constitute the majority of the population of that city.

And there is really no reason why a balloon voyage to Europe should not be attempted, Aeronauts assert that in the upper regions of the atmosphere there is a steady current of wind which would carry a balloon eastward at the rate of 00 miles an hour. If so, the voyage across the ocean could be made in a shorter time and with quite as much safety as by an ordinary steamer. It is certainly time that the attempt were made. Aeronauts have so frequently demonstrated, at least to their own satisfaction, the perfect feasibility of crossing the Atlantic in a balloon, that the public is anxious that they should either cease to discuss the subject or else prove their sincerity by embarking upon a trans-atlantic balloon voyage. In the language of the New York *Times*, there is only one objection to the project of the Boston aeronauts.

And now we hear of a French chemist who has discovered how to make a "Manna" of ordinary soil by a chemical process. The food is said to contain all the necessary elements for sustaining life, while it is far more pleasant and nutritious than ordinary food of breads and meats as served on our tables at the present day. Is it possible that we will live to see the day when nature's slow process for producing bread, and food for animals which make our meat, will be superceded by the science of man who will extract those same elements in perhaps a purer form, from the immediate surface of mother earth?

TELEGRAPHICA.

A Woman's Veil.

BY J. B. BRADFORD.

It was full many a season since,
When I was summering at Cape May;
They had a foolish fashion then—
Mayhap they have the same to-day—
That every lady in the dance,
If pleased with any should not fail
Unto the partner she preferred,
To give her veil.

And there was one I mind of me,
Whose name—well, never mind her name:
Helen or Alice, Blanche or Maude,
To you who read will be the same.
But that old fashion of the veils,
Haply recalls the past, and stirs
Memories that cluster round the night,
She gave me hers.

She flushed, poor child, in giving it,
And I too felt my brow grow warm
As laughingly, with fingers deft,
She knotted it about my arm!
And though the color on her cheek
Was like the light in morning skies,
I thought I saw a holier dawn
Within her eyes.

The dance was over and we strolled
Out from the ball-room's glittered press,
To meet the breeze that many armed
Clasped each one in its cool caress;
And sauntering on we reached the sea—
The far waltz music's cadence sweet,
Mixed with the sound of waves that died
About our feet.

We talked of what I now forget.
But carelessly, or seemingly so;
Next day I was to leave, but then
In town we'd meet again, you know.
Ah, well-a-day! the gods dispose,
And ruined hopes are worse than vain;
She laughed good-by—I never saw
Her face again.

Time changes us not for the best,
Though grief sometimes defeats his art,
And keeps a little patch spring-green
In the white winter of the heart.
And mine, though colder grown with years,
Feels that it is not frozen quite,
As memory goes wandering back
To that June night.

And sometimes on the summer eves,
Within my chamber all alone,
I watch the moon rise o'er the roofs
And think I hear the ocean tone;
And through the smoke of my cigar
See loves and joys I have not met,
[illegible] as they vanish in the haze,
[illegible]

Life's a sad puzzle, and our hearts
Grow faint in searching for the clue;
She went before at twenty-five,
And I live on at fifty-two—
And wait the end; for well I know
That I shall meet her without fail,
On some spring morning—and till then,
I keep the veil.

To the Ocean.

Prodigious dampness! Thy poor shore
Gets many a welt;
Thy blinding surf, with angry roar,
Wetteth my pelt.

Thou deep significance of size!
Thou boss of tanks!
But gaze I, and my hair doth rise
In compact hanks.

I marvel not that thou shouldst call
Thyself complete,
And cringe me that all else is small—
E'en my conceit!

Came I prepared, with words combined,
To stun the gods—
To launch strange trope upon the wind
In ponderous wads;

But now, alas! thy endless blare
My genius scoops;
My fancy ebbs—I ne'er may wear
Rhyme's [illegible]

Comic Epitaphs.

In a town in Connecticut there lies buried a man who in life had a large wen on the top of his head He is thus commemorated:

"Our father lies beneath the sod,
His spirit's gone unto his God;
We never more shall hear his tread,
Nor see the wen upon his head."

The following is said to be on a gravestone near London:

"Poor Martha Snell has gone away,
Her would if she could, but her couldn't stay;
Her had two bad legs and a baddish cough,
It was her two bad legs that carried her off."

On a tombstone in Portland, Maine, over the body of a child, is this couplet:

"The little hero that lies here
Was conquered by the diarrhea."

On a tombstone in Worcester, England, is this singular inscription:

"Mammy and I together lived
Just two years and a half;
She went first—I followed next,
The cow before the calf."

his comes from Ohio:

"Under this sod
And under these trees
Lieth the bod-
y of Solomon Pease,
He's not in this hole,
But only his pod;
He Shelled out his soul
And went up to his god.,,

These lines on a tombstone at Childwall England are well known:

"Here lies me and my three daughters,
Brought here by using Seidlitz waters;
If we had stuck to Epsom salts
We wouldn't have been in these ere vaults.

Here is how they do this sort of thing in Germany:

By the thrust of ox's horn
Came I into Heaven's bourn;
All so quickly did I die,
Wife and children leave must I;
But in eternity rest I now,
All through thee, thou wild beast, thou!"

A good many men discover that they have been henpecked, after their wives have been dead, and boldly state the fact—or their epitaph-makers do for them—possibly for the discouragement of living shrews. Here is a number of sarcasms directed against women:

"Here lies the man Richard,
And Mary his wife;
Their surname was Prichard,
They lived without strife;
And the reason was plain—
They abounded in riches,
They no care had, nor pain,
And the *wife wore the breeches.*"

"Here lies wife second of old Wing Rogers
She's safe from care and I from bothers!
If death had known thee as well as I,
He ne'er had stopped but passed thee by.
I wish him joy, but much I fear
He'll rue the day he came thee near."

A relieved and joyful husband caused this inscription to be placed on the headstone of his wife—in Kilmury churchyard

"This stone was raised by Sarah's lord,
Not Sarah's virtues to record—
For they're well known to all the town,—
But it was *raised* to keep *her down.*"

A sea-captain of Sag Harbor, Long Island, pointed a moral upon the tombstone of his third wife:

"Behold living mortals passing by,
How thick the partners of one husband lie,
Vast and unsearchable the ways of God:
Just but severe his chastening rod."

This in remembrance of a clock-maker:

"Here lyes a man who all his mortal life
Past mending clocks, but cou'dna mend his wyfe;
The larum o'hys bell was ne'er sae shrill
As was her tongue, aye clacking like a mill.
But now he's gane—oh, whither nane can tell—
I hope beyond the soun' o' Matty's bell.",

One Robert Kemp placed these lines on the tombstone of his deceased wife:

"She once was mine,
But now, O Lord,
I her to thee resign,
And remain your obedient, humble servant,
Robert Kemp."

Let us take the taste out of our mouths, as the children say, with the following exquisite couplet to the memory of a man and his wife, in the Church of Quorndon, England:

"He first departed—she a little tried
To live without him—liked it not and died."

The difficulties of rhyme, which have been so far overcome in our quotations, proved too obstinate for the writers of these two epitaphs:

"Here lies, alas! more's the pity,
All that remains of Nicholas Newelty.
[illegible]

"Here lies the remains of Thomas Woodhen.
The most amiable of husbands and excellent of men.
N. B.—His real name was Woodcock, but it wouldn't come in rhyme. *His Widow.*"

Some of the most amusing epitaphs in Mr. Northend's book are in prose. This one is from a tombstone in Pennsylvania:

"Battle of Shiloh,
April 6, 1862.

John D. L——was born March 25th, 1829, in the town of West Dresden, State of New York, where the wicked cease from troubling and the weary are at rest."

A tombstone at Saratoga contains the following testimony and warning."

"Emma, dau'r of Abraham and Matilda C—— and wife of Theodore S——, died Aug. 10, 1867, Æ 26 yrs., leaving five children—married too young against her father's will.

Single women take warning.

An inscription on a tombstone in East Tennessee concludes thus:

"She lived a life of virtue and died of cholera morbus, caused by eating green fruit, in the hope of a blessed immortality, at the early age of 21 years months and 16 days. Reader, go thou and do likewise."

On a tombstone on Lake Superior these words are inscribed:

"J.—— .——. Accidentally shot as a mark of affection by his brother."

They commemorate differently in California as witness this inscription on a tombstone near San Diego:

"This yere is sacred to the memory of William Henry Skaraken, who caim to his deth by bein shot by Colt's revolver—one of the old kind, bras mountid and of sutch is the kingdom of heavin."

It was a gardener, we imagine, who deplored his child in this fashion:

"Our little Jacob
Has been taken away from this Earthly Garden
To Bloom
In a Superior Flower-pot
Above."

Only a German could have written this:

"My vife Susun is dead; if she'd had life till next Friday she'd been dead shust two weeks. As a tree falls so must she stand. All things is impossible mit God."

The piety of this is doubtful:

"He lived and died a true christian,
He loved his friends and hated his enemies."

The egotism of this inscription, which still exists at Saragossa, Spain, is stupendous:

"Here lies John Quebecca, precentor to My Lord, the King. When he is admitted to the choir of angels, whose society he will embellish, and where he will distinguish himself by his powers of song, God, shall say to the angels: 'Cease, ye calves! and let me hear John Quebecca, precentor of My Lord, the King!'"

One would hardly expect to find advertisements on tombstones, but they are occasionally to be met with. Here is the example from a cemetery, near Paris:

"Here lies Fournier (Pierre Sictor),
Inventor of 'Everlasting Lamps,'
Which burn only one centimes worth of oil in an hour
He Was a Good Father, Son, and Husband.
His Inconsolable Widow
Continues his business at No. 10 Rue aux Trois;
Goods sent to all parts of the city.
N. B—Do not mistake the opposite shop for this.
S. V. P. R. I. P."

There is an eye to business here:

"Beneath this stone in hopes of Zion,
There lies the landlord of the Lion.
Resigned unto the heavenly will,
His son keeps on the business still."

And an eye to matrimony here—the eye being that of a widow in Maine:

"Sacred to the memory of James H. R——n, who died Aug. 6th, 1800 His widow who mourns as one who can be comforted, aged 24, and possessing every qualification for a good wife, lives at —— street in this village."

This couplet is found in a Connecticut churchyard:

"Here lies two twins, all side by side
Of the small pox both of them died."

And this is in a burial ground in Pennsylvania:

"Eliza sorrowing, rears this marble slab
To her dear John who died of eating crab."

The summer diet of Cape May, where this stanza was written, cannot be recommended for children:

Mary Jane,
Aged 11 yrs. and 8 mos.
She was not smart, she was not fair,
But hearts with grief for her are swellin';
And empty stands her little chair—
She died of eatin' watermelin."

The late business and present whereabouts of a deceased sea-captain are summed up tersely on a Block Island headstone:

"He's done a-catching cod
And gone to meet his God."

This epitaph, which exists in Pittsfield, Massachusetts, is promising, or threatening, as one regards the increase of population, and recalls a sign in vogue in oyster-eating neighborhoods, viz: "Families supplied:"

"Ween you my friends are passing by,
And this informs you where I lie,
Remember you ere long must have,
Like me, a mansion in the grave,
Also 3 infants, 2 sons and a daughter."

It was a brother-in-law, and probably an unmarried one who penned this description on a monument Horsley-Down Church Cumberland, England, 1763:

"Here lie the bodies
Of Thomas Bond and Mary his wife,
She was temperate, chaste, and charitable;
But
She was proud, peevish, and passionate.
She was an affectionate wife, and a tender mother
But
Her husband and child, whom she loved,
Seldom saw her countenance without a disgusting frown
Whilst she received visitors whom she despised
whit an endearing smile.
Her behaviour was discreet towards strangers;
But
Independent in her family,
Abroad, her conduct was influenced by good breeding;
But
At home by ill temper.
She was a professed enemy to flattery,
And was seldom known to praise or commend;
But
The talents in which she principally excelled,
Were difference of opinion, and discovering flaws and imperfections.
She was an admirable economist
And without prodigality,
Dispensed plenty to every one in her family;
But
Would sacrifice their eyes to a farthing candle.
She sometimes made her husband happy with her good qualities;
But
Much more frequently miserable——with her many failings;
Insomuch that in thirty years cohabitation he
[illegible]
[illegible] all her virtues,
He had not in the whole enjoyed two years of matrimonial comfort.
At Length
Finding that she had lost the affections of her husband,
As well as the regard of her neighbors,
Family disputes having been divulged by servants
She died of vexation, July 20th, 1768,
Aged 48 years.
Her worn out husband survivied her four months and two days,
And departed this life Nov. 28 1768.
In the 54th year of his age.
William Bond, brother to the diceased erected this stone,
As a *weekly monitor* to to the surviving wives of this parish.
That they may avoid the infamy
Of having their memories handed to posterity
With a Patch Work character."

They occasionally become biographical in New Hampshire, if we may credit this inscription, which is said to be copied from a tombstone in Dover:

"Repository
of
Husband & Wife.
Joseph Hartwell, Inanimated.
Apr. 7, 1867 Æt. 68
Betsey Hartwell, Inanimated
Dec. 7, 1862, Æt. 63.

Scott and Bulwer.

A writer in a recent number of the *Temple Bar*, in speaking of the great authors says: Scott painted the external man; he seldom troubled to seek for "the motive and the cue for passion." He did not care to trace the subtle thought from its germ until it stood forth a *thing*. In the novels of Lord Lytton the physical man is ever subservient to the mental—the *mind* of a character is more prominent than his actions. No two writers, psychologically considered, were more dissimilar than these great masters, to whom, as pioneers, prose fiction is chiefly indebted for its overwhelming supremacy in the literature of the present day. The excellences of the one are the weaknesses of the other. Much of this dissimilarity must be ascribed to the diverse influences under which they began to write. Scott was forty years old when his first novel appeared; Bulwer was in his teens. The former's more romantic vein of thought had been already worked out in his poems. He was a member of the most anti-romantic of professions, a conservative in all things, little influenced by the new school of ideas which had arisen out of the chaos of the French revolution; he was essentially a man of the pre-revolutionary period, the barriers of which he never seemed, intellectually, to have crossed. Bulwer was the brilliant man of fashion—restless, erratic, fond of straying out of the social grooves into the wilderness of life; now the cynosure of the drawing-room, now the solitary pedestrian, wandering amid the wildest scenes of Italy or Switzerland, or the companion of a horde of Gypsies; an enthusiastic disciple of the new prophets, imbued with the brilliant radicalism of France, the mysticism and metaphysics of Germany, and the sensuous, passionate poetry of which Byron, Shelley, and Keats were the high priests. Scott half despised the art of novel-writing. He wrote to satisfy no inward sense of artistic beauty—not to embody the teeming forms of a shadow-haunted brain, but to build Abbotsford; he wrote that which would sell best. On the other hand, Bulwer held the art of the novelist second to none. Writing was to him a necessity strong as speech—the outpourings of a soul overflowing with passion that would have utterance. No man was ever more eager for distinction—yearned more for fame and approbation; yet to obtain them he never departed from the ideal artistic standard which he had fixed in his mind. While Sir Walter Scott governed his literary pursuits by the same law that obtains in commercial transactions, Lord Lytton—to judge by several of his works which were written under the full conviction that they would evoke a storm of hostile criticism—believed that art should be amenable only to its own laws; but to those laws he bowed submissively. Thus each of his great works is like some delicious strain of concerted music in which the harmonies and counter-harmonies, the various instruments and the opposing parts, blend in one delicious whole.

Croquet.

If there is any amusement to which it would seem that no rational being could possibly take exception, it is croquet. In England it is the curate's chief wordly delight, and even the evangelical rector of venerable years does not hesitate to share its mild excitement with the female members of his flock. In this country, a Methodist Conference which condemned whist and denounced dancing [illegible] sanctioning it as an amusement in which serious people could lawfully engage.

Not only is the morality of croquet thus placed beyond suspicion, but its usefulness as a hygienic agent has been strenuously urged. We have been told that it afforded the best possible exercise to young ladies and indolent young men, and that it developed any quantity of eligible muscles. It expanded the chest, strengthened the arm, and gave elasticity to the foot and leg. In fact, it was amusement, exercise, and æsthetics combined, and croquet players had gradually come to the conviction that in playing croquet they were fulfilling a duty to themselves and to future generations.

It is sad to find that the world in general has been utterly mistaken, and that croquet is in reality full of frightful dangers. It is not the mind of the croquet player which is endangered by this seductive sport, although it is possible that weak intellects have been still farther weakened by a long succession of those misfortunes which in the language of the game transforms the unhappy player into a "booby." Neither is it alleged that the morals of the community are deteriorated by the mild flirtation which usually ensues between the young lady whose ball is "helped" and the gentleman who helps it. The ills to which the croquet player is the inevitable heir are purely physical, and a list of them has recently been furnished by a London paper.

"Croquet, we are told by this authority, produces, first of all, a curvature of the spine. This is the necessary consequence of the position in which the player stands when striking the ball. Moreover, there are a dozen or so other deformities which devotion to the game entails. The player develops the muscles of the right arm at the expense of those of the left. He, or she, also bruises the left foot to an extent that produces permanent bunions and other superfluous diversities of surface, ultimately ending in lameness. The muscles of the leg enlarge, so as to make that limb rediculously short in comparison with its companion. The unfortunate croquet-player, having thus earned a curved spine, a disproportionately large right arm, and an equally ill-arranged left leg, together with painful bunions and permanent lameness, finally perishes miserably from consumption, induced by the unnatural constraint to which the chest is subject when stooping over the ball."

This is really a discouraging report, and were implicit reliance to be placed upon so dreary a catalogue of woes, there would be an immediate turning of mallets into kindling wood, and a beating of croquet hoops into telegraph wire. As it is, the reasoning being who is addicted to croquet will reflect that inasmuch as the player rarely stoops except when striking the ball, and as that feat is accomplished only at intervals during the game, the danger of ruining the spine is hardly worth considering, and is rather less than is incurred in sweeping a small sized room, or writing the briefest of letters. Moreover, no player who deserves the name ever hits his or her foot with the mallet, so that the idea of laming one's self could only have originated with a disgusted beginner, who had lost a game by mistaking his foot for a ball. Indeed, this attack on croquet bears intrinsic evidence that it is the work of some unfortunate man, who has either brought ridicule upon himself by unskillful playing, or has been converted into a misanthrope by the contemplation of the superior skill of his rival when playing in partnership with the object of his affections. At all events, his dismal prophecies as to the fate of the croquet player may safely be disregarded, and the lovers of that game may pursue the even tenor of their way, heedless of curvatures, lameness, consumption and unequally developed limbs.

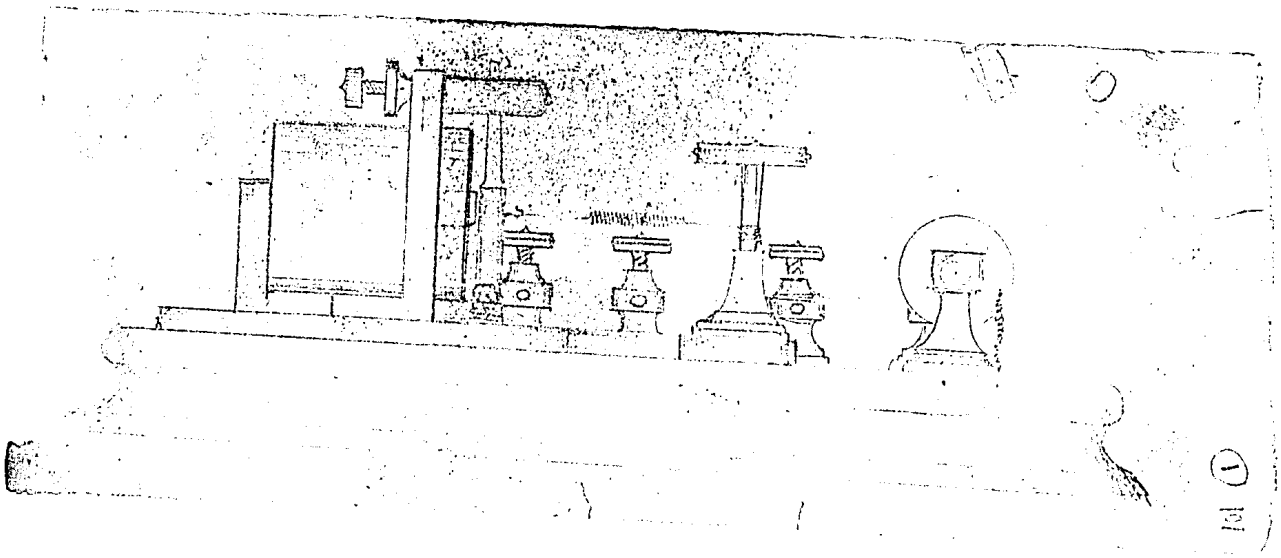
Dreams.

Reverting to the question before us wha are the materials out of which dreams are formed? The obvious and sole answer is—from the sensations, ideas, emotions, act, and events of antecedent life. Puttin aside all notions, ancient or modern, of supernatural intervention, the phenomena of waking existence are those alone to which we can look for their interpretation. The passage quoted from Cicero, while well expressing this fact, denotes also those strange perturbations which form the distinctive character of dreams and the great mystery of their nature. We can understand (or fancy we understand) the memories of past images or events impressed upon the brain. But the manner of their grouping in the mind during sleep is the marvel with which we are here concerned. Loosening from all fetters of time and place, and freed from control of the will, the dream makes a little world of its own, bringing into strangely broken succession scenes which have no counterpart in actual life; conjunctions of persons, places, times and incidents, which never did or could have occurred in such combination. The complete dream disregards all realities. It brings the dead back among the living without surprise to the dreamer, and embodies them in the entangled story which have no recollected beginning or end; which run abruptly into one another; confuse personal identities, and blend impossibilities with the most common incidents of life. Shakespare has well called dreams "the children of an idle brain." That power in fact is dormant which gives sequence and congruity to the acts of the waking mind. But still, even here, anal-[illegible] images of sensible objects occurring in dreams would seem to be closely akin to those which the memory furnishes to the mind awake, either by effort of will or by mere automatic connections of thought. In this case, as in the other, they are vague and fleeting. No effort of will can long detain them before the waking consciousness; and in dreams unaided by will, they are still more transient and disjointed. In both cases, objects of vision minister chiefly to this subjective action, while the waking mind can create by will, or receive unbidden, a sensorial memory of rhythmical sounds, clothing itself often in actual melodies, the reflex music of the brain. This latter point, in its various physiological connections, has scarcely had its due share of attention.

Regarding, then, the images of dreams, however perturbed in order, as derived from those of daily life, we still have to ask the question, whether this mimic imagery ever goes beyond, with inventions new to the senses? We think not. We may dream of the Centaurs or the winged Assyrian bulls, as we have seen them in the British Museum, but we do not in our sleep create monstrosities of this kind. Under the most fantastic grouping of persons and incidents, the individual images are not unnatural or distorted. We believe this to be so; but here, as often elsewhere on this subject, we must ask our readers to consult their own experience.—*The Edinburg Review.*

A terrible explosion took place at the Drummond mine, Westville, Picton Co., Nova Scotia, on May 14, resembling a volcanic eruption in violence and destructive force, shaking the earth for miles around, and sending volumes of smoke and fierce flames from the air shafts to an immense height. The fire raged three days during which several explosions occurred, killing and burning up more than seventy men. The cause of this fearful disaster was the use of powder for blasting where it had been prohibited. Most of the men killed have left dependent families.

The Ecumenical Council, which is to be held in New York from Oct. 2 to 12, is its sixth anniversary, it having been organized for the United States in 1867. The first of these meetings was held in 1846, in Freemasons' Hall, London, and there were present 921 delegates, representing 50 denominations. Representatives of all Protestant denominations from all lands are expected to attend the coming meeting, to shake the friendly hand, interchange sentiments, discuss topics of common interest to the Christian world and to fraternize generally.



101

Secondary Current is enormously increased as it now ~~[illegible]~~ passes in a circuit of low resistance, consequently, the speed will be greatly reduced.

The disturbing effect of this secondary current is made strikingly apparent when an ordinary Morse relay is shunted with a Theoretical resistance ~~about~~ Signals which were previously clear will on the addition of the shunt will be scarcely readable.

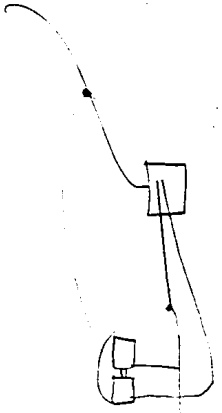
It is obvious that this is not the system used by the Automatic Telegraph Company

~~On~~ In the same article and in other issues which have appeared since that time, Mr Little speaks of his Canary Colored chemical paper as a great adjunct to his system. As my patent for this solution has at my request been retained in the Patent office, Mr Little is unable to give the formula of his paper to the readers of the telegrapher but will probably do so when the patent is ~~issued~~ issued, The appellation of Canary Colored paper which he gives it

102 (1)

102

102



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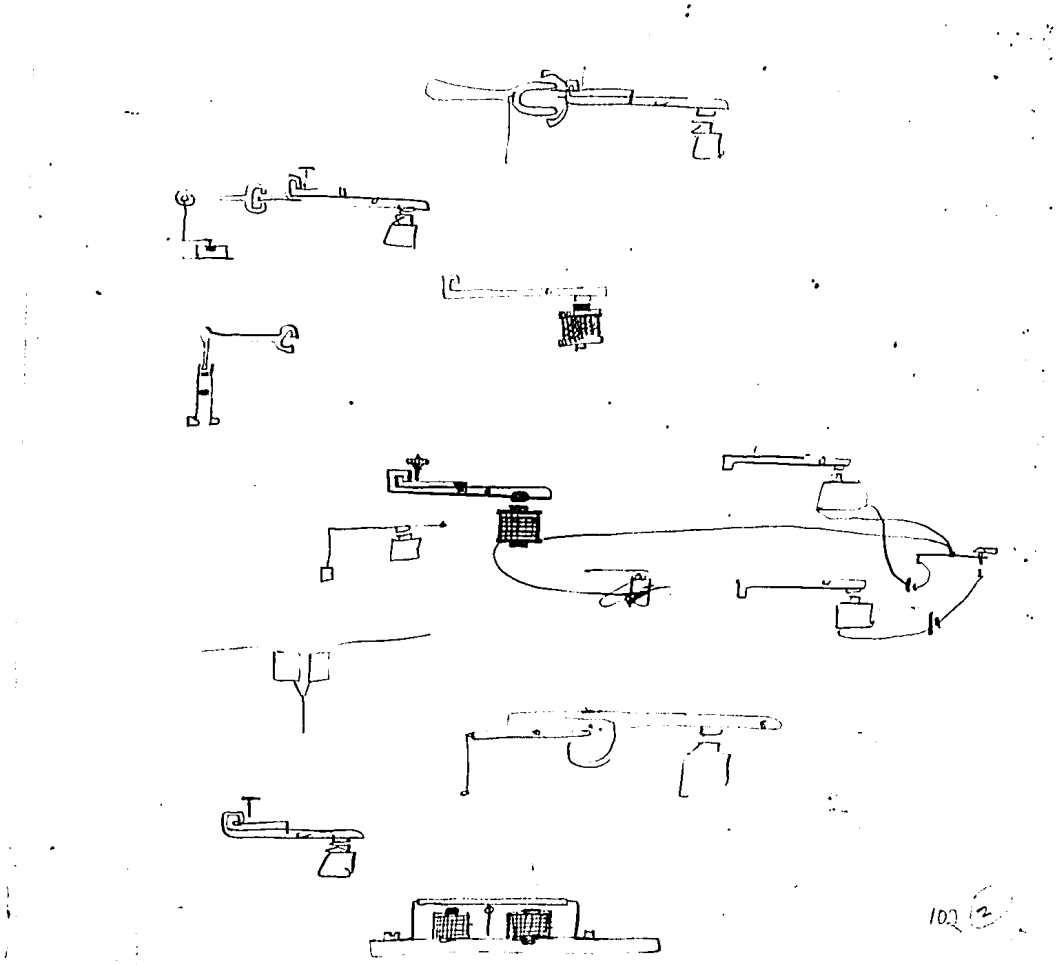

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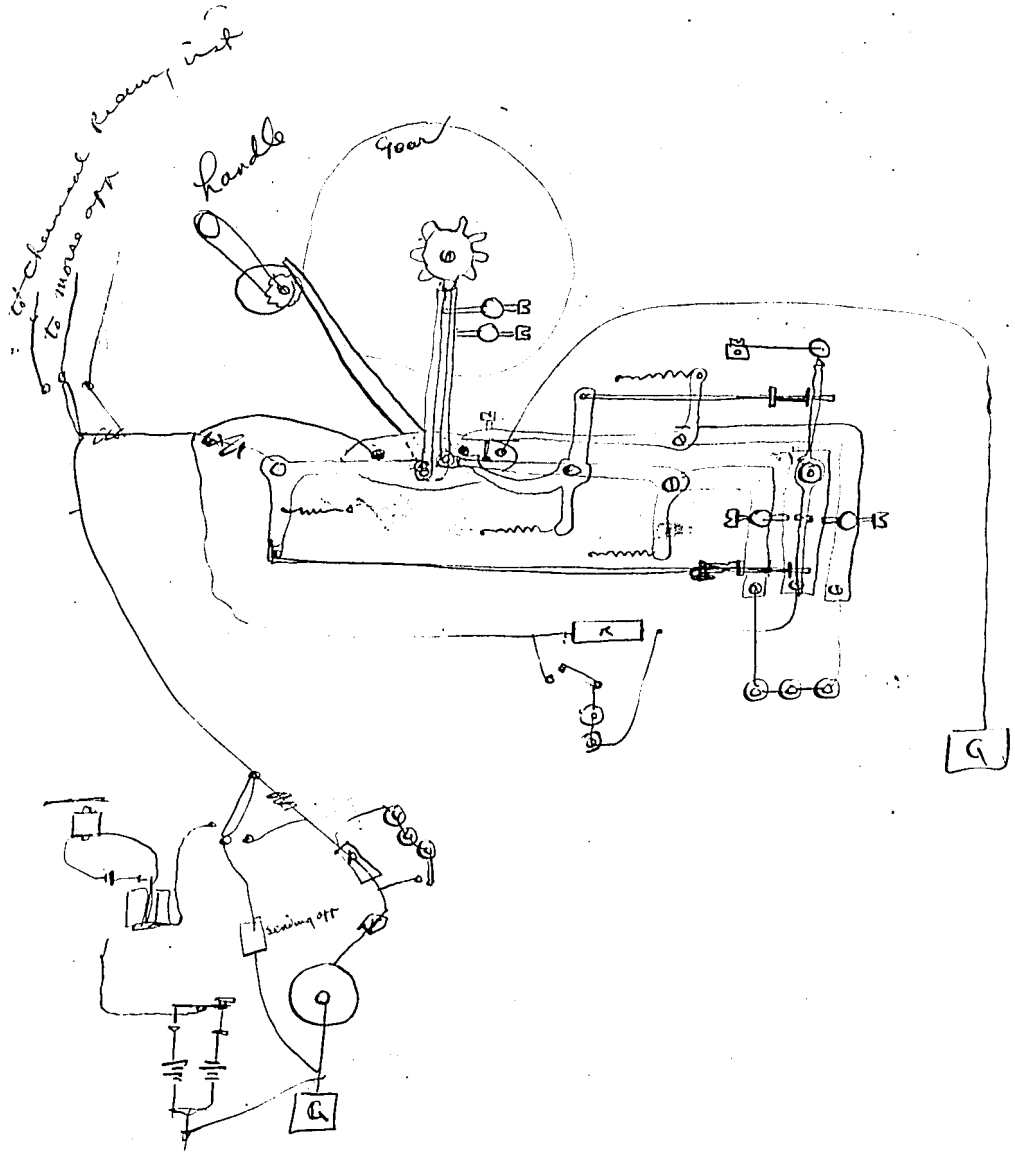

103 ①

103

1 Duplex

The Duplex principle was invented by Dr Gentl. ~~The first practical Duplex was invented by Messrs G Farmer of Boston in But the modern Duplex and the one which~~ But the first practical Duplex was invented by ~~E B~~ Mr Stearns ~~of~~ Boston.

As Duplex instrumentation is one of considerable importance at the present time and a branch which illustrates the vast number of combinations which may be made to produce the same result and the Explanations it gives to several phenomena hitherto not well understood will be my Excuse for the great ~~length~~ length number of ~~pages~~ devoted ~~to~~ this subject

103 (2)

103

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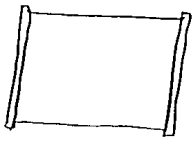
J. C. REIFF, Sec'y & Treas. GEO. HARRINGTON, President.

OFFICE
Automatic Telegraph Company,
No. 80 BROADWAY.

New York, 187

p. 704

Page 2.



The rubber cover is made of thick stock so a place may be turned in it to wind a single layer of wire, or if it is more convenient.

The fine wire may be wound on the spool ~~sufficient to~~ make 100 ohms, and then the single layer of 23 wire may be wound on care being taken that this last layer is well insulated from the fine wire, Then the wires may be brought out of the heads,

The fine wire is wound (see page 1) in the regular way so that if A B be connected together it would form a single magnet,

There are 10 binding posts, ~~to all~~ both, The magnet ~~to~~ have the new right & left handed thread ~~adjustment~~ on, The diameter of the spools

5 incorporators, by paying $15.00 for initial expenses shall receive 50.000, Each. $250.000

James B Edson. 50.000.

Total 550.000

Remaining in treasury to be sold & money, for working expenses income returned in dividend. etc

$.450.000.

Cities like Baltimore Washington, Capital stock to be: 100.000. $\frac{1}{3}$ to go to the Parent Co $\frac{1}{3}$ to the party or parties Who initiates it & places it on a paying basis, the balance to be given to incorporators by paying each 1,000 ~~sold, as working Expenses, the parent Co to furnish the machinery wire~~

(1 X 2

104 (2)

J. C. REIFF, Sec'y & Treas. GEO. HARRINGTON, President.

OFFICE
Automatic Telegraph Company,
No. 80 BROADWAY.

p. 704

New York, 187

Page 2.

Stock of said Co.
of the 1000000. the stock to be
apportioned as follows.
Edison & party, for patents now & to be
obtained relating to this branch of
letigh business and for service
as Engineer to be performed as well
as facilities of manufacturing
are to receive. $250.000.

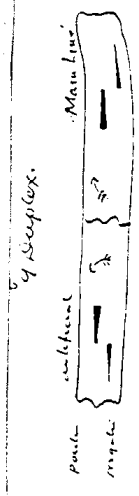
5 incorporators, by paying into the
treasury $15.00 for initial Expenses shall
receive 50.000. Each. $250.000
James B Edson. 50.000.
Total 550.000

Remaining in treasury to be
sold & money for working expenses income
returned in dividend. etc
$450.000.

Cities like Baltimore Washington,
Capital stock to be: 100.000. $\frac{1}{3}$ to
go to the parent Co $\frac{1}{3}$ to the
party or parties Who initiate it &
places it on a paying basis.
the balance to be ~~sold~~ given to incorporators by
paying each. 1000
~~Expenses, the parent Co to furnish~~
~~the machinery wire~~

(1/2)

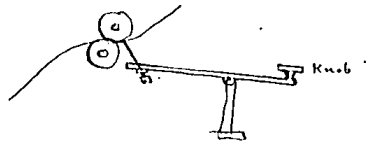
104
(2)



105

System of Chemical Telegraphy

For the preparation of the transmitting paper I use a Morse ~~Re~~ Embossing Register or Machine, operated by a battery and Key, ~~or~~ or directly without the battery by placing a Knob upon the Embossing lever and ~~can~~ simply Embossing the dots and dashes by pressing upon the Knob, ~~the~~ ~~difference between the one and the other~~ by making a double point dash upon the lower line, I emboss two lines the use of which I will presently explain.



~~I have already~~ I am at present experimenting upon the application of a Key board to the ~~lower~~ Embossing lever whereby any character is embossed by the depression of a Key, and therefore do not wish to confine myself to the above devices for the preparation of the paper,

in the telegraph ~~for~~ Dec 20 1873,
Two systems are discribed the first is the Chemical System the second the Ink Recording System, In the Chemical System Mr Little Claims to obtain great speeds by the addition ~~of a tank~~ of the recording instrument ~~at the receiving station~~ and a Condenser. ~~both acting as shunt~~
But unfortunately for Mr Little in his utter ignorance of the the direction of the flow of the inductive Current from the Condenser he has got it hitched on in the wrong place, and actually increases the electrostatic Capacity of the line just what the claims to prevent, ~~In~~ in an experiment made by my assistant Mr Blakeley on the Washington Line soon after the publication of the diagram; ~~resulted~~ it was found that with sensitive chemical paper no speed of 100 words per minute could be obtained without any appliances whatever, when the line was in a favorable Condition but on the addition of Mr Little's ~~Condenser~~ device the natural speed was reduced to 75 words per minute. Even upon a local circuit where an unlimited speed can be obtained, The addition of Mr Little's invention [illegible] It is evident

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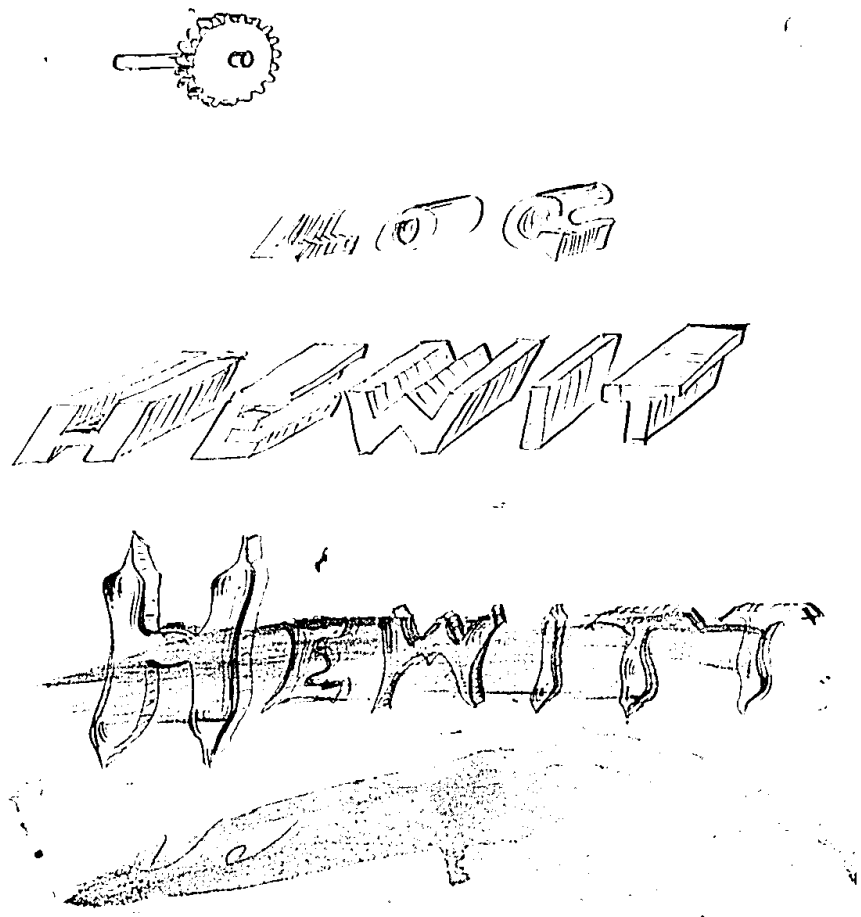

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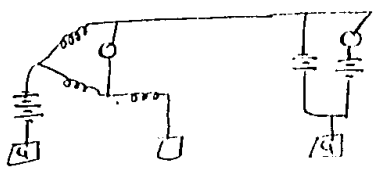

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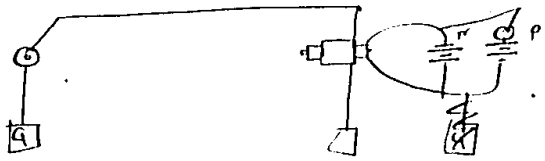

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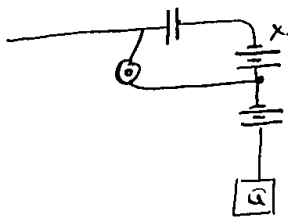
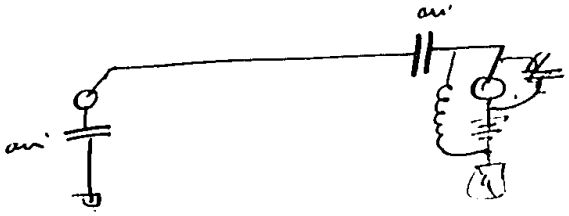
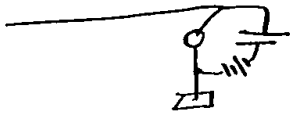


x large number ~~of small~~ of cells low resistance

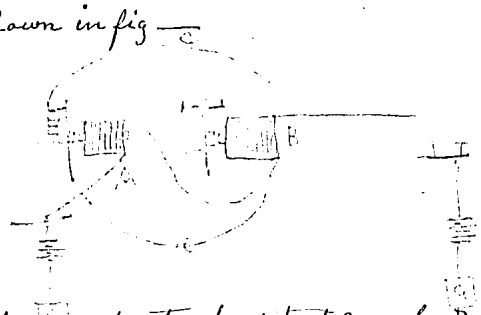
Try

Caveat,

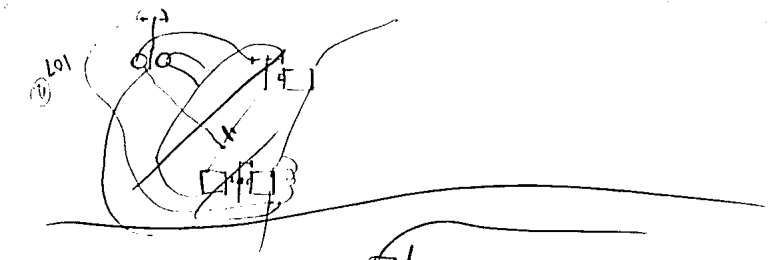


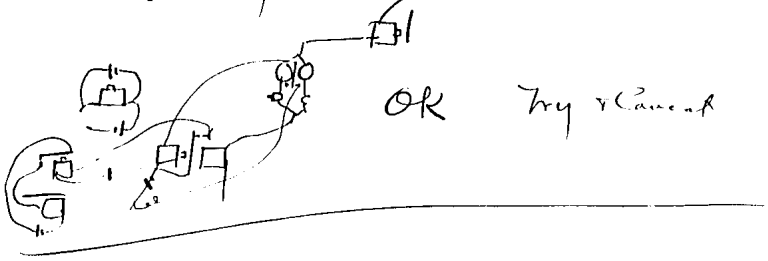


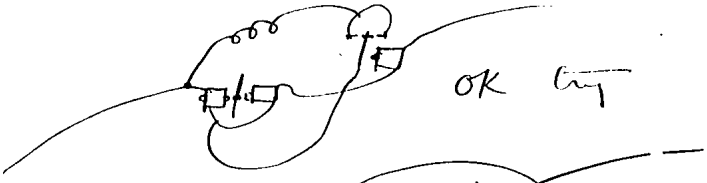
will be the effect of the leakage current numerous attempts have been made to render the effect of the leakage current nugatory on the receiving relay — among which may be mentioned Kames and Smith. Kramers device is described in Duck Schiller and Sabine Smiths device is shown in fig —

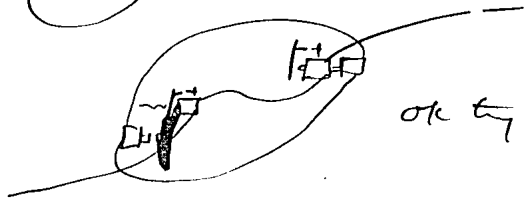


A. is a relay magnet adjusted for distant signals B is another relay which may work an ink recorder or act as a sounder etc both are in the main circuit — when the current ducted the distant battery ceases the armature of the relay, A, flies a way from magnet and makes contact with the points E, and short circuits or shunts the magnet, B, by the wires, C, D, when the distant current is on the relay lever of, A, is drawn forward the shunt is removed and the current due to the escape and distant current energizes the magnet — B — but a local might be passed through the magnet, B, and produce precisely the same effect and it still leaves the evils above enumerated untouched in this









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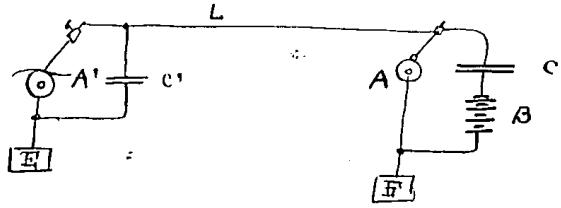
Another break for this purpose is shewn in fig 21

D is a vibrating lever having its ends insulated from its centre, & which is put in motion by a tooth wheel A. 1 2 3 & 4 are contact springs connected to battery as in Fig 21. The two points of vibrating lever are connected to sounder or line. By looking at the figure it will readily be seen that when the lever is on the tooth of a wheel the battery is connected with the sounder through springs 1 & 4 — & when it rests in the space, it is connected through springs 2 & 3 thus using reverse currents.

108 7

7 Caveat.



A' is the Chemical receiving instrument A the transmitting instrument, C' a condenser added to increase the static capacity of the line B is the main battery, C a Condenser,

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108 3

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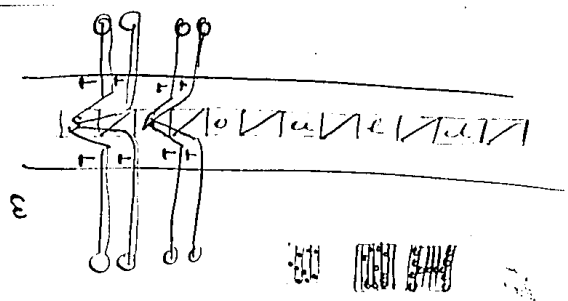
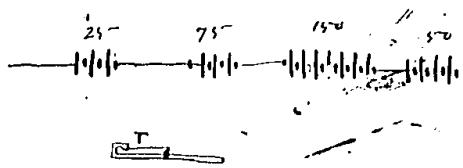
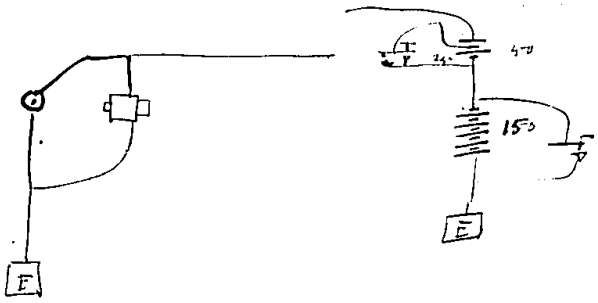


we have not succeeded

we have immediately

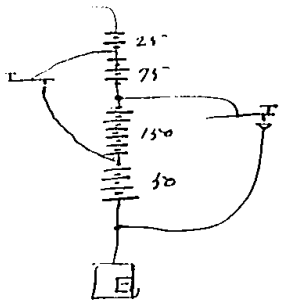
should not be

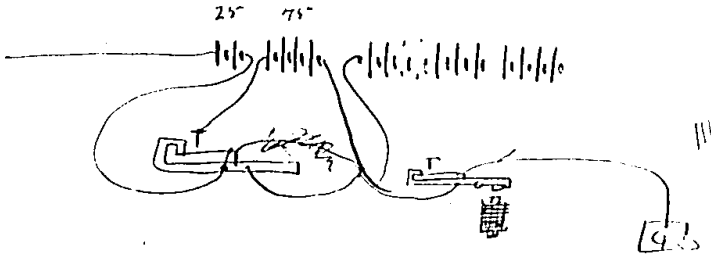




Line

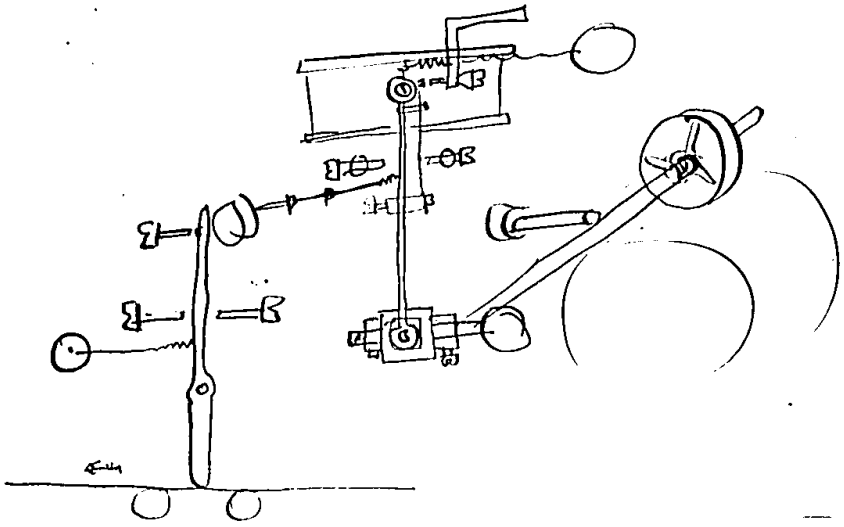
one Twenty
Twenty
& forty eight





111 ①

111



111 ②

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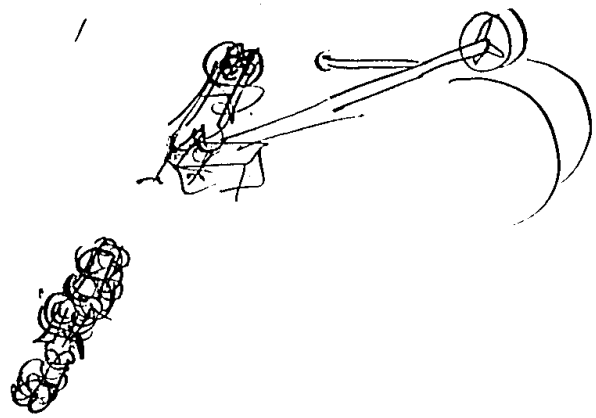

111

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Notes

= The vibrating levers of polarized relays should always be placed in a horizontal position otherwise ~~which prevents to a great extent~~ the ~~effect of gravitation, which if the directive force of the permanent magnetism be weak~~ If they placed perpendicularly ~~an~~ and not perfectly balanced the lever is apt to throw over on one side when the permanent magnetism is weak -

= In the compass form of galvanometers the needle is sometimes found to stick to the Glass ~~or metallic Circle~~ without any apparent reason. The Cause of this is the Electrification of the Glass plate by brushing away with a cloth. The Glass may be discharged by laying the flat of the hand upon it =

= The spark due to a great number of magnets in a Circuit of low resistance may be almost entirely prevented by shunting each magnet with a Condenser of two plates one foot square each.

Small rounded platina points make better contacts than large flat ones because with the former there is a Clearance for the oxide due to the spark, while the oxide on the latter accumulate and prevent perfect Contact, The amount of oxide ~~greatly~~ is greater when the platina is soft and as Platina may be drawn ~~nearly~~ as hard as Steel, it follows that ~~this~~ it should always be used hard drawn =

112 (1)

112

at the distant End is Connected or disconnected by the battery G. The relay still responds to the Current of the distant battery. So far this method answers for short lines ~~as between Melfort~~ of 80 and 100 miles, but on longer lines another interfering cause arises ~~which~~ Called static induction and the object of the Condenser C is to Compensate for this phenomena & preserve the balance necessary ~~to~~ for perfect signalling.

112 (2)

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113.

12 Bk wheel

p. length of contact will shorten as the point n oxidizes; -

The most perfect break in a mechanical point of view is that shown in fig 11 This is specially applicable to high speeds

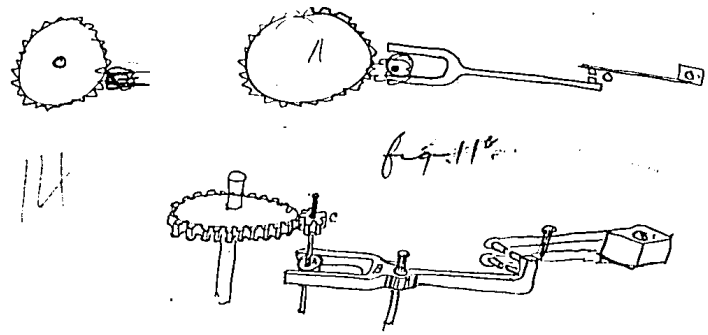

fig 11

~~As with other breaks the teeth length will vary with~~

The Contacts are made as in fig 10. ~~But~~ But the toothed wheel which gives motion to the vibrating lever the length of vibration of which will vary as the rapidity of rotation of the toothed wheel increased, is reversed by a gear pin & Cam wheel. A is the Cam ~~wheel~~ or Eccentric wheel working in the forked ~~arm~~ lever B.

113 (1) 113 (2) 113 (3)

process for dissolving the cellulose by

113

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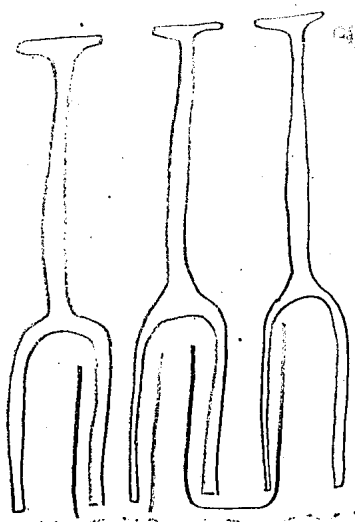


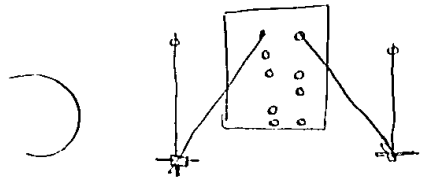
113

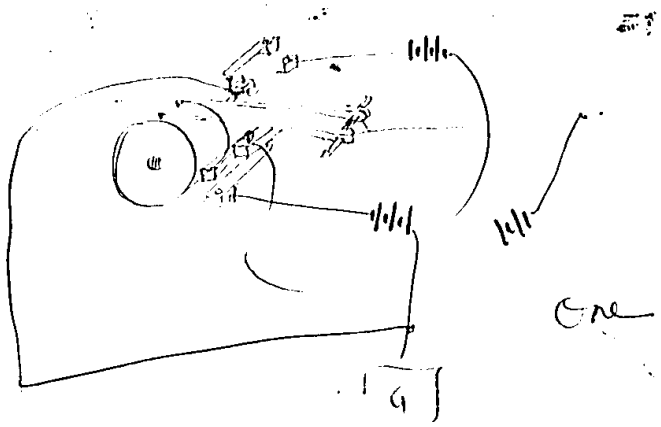
113 ②

113 ③

process for chemical the cellulose by

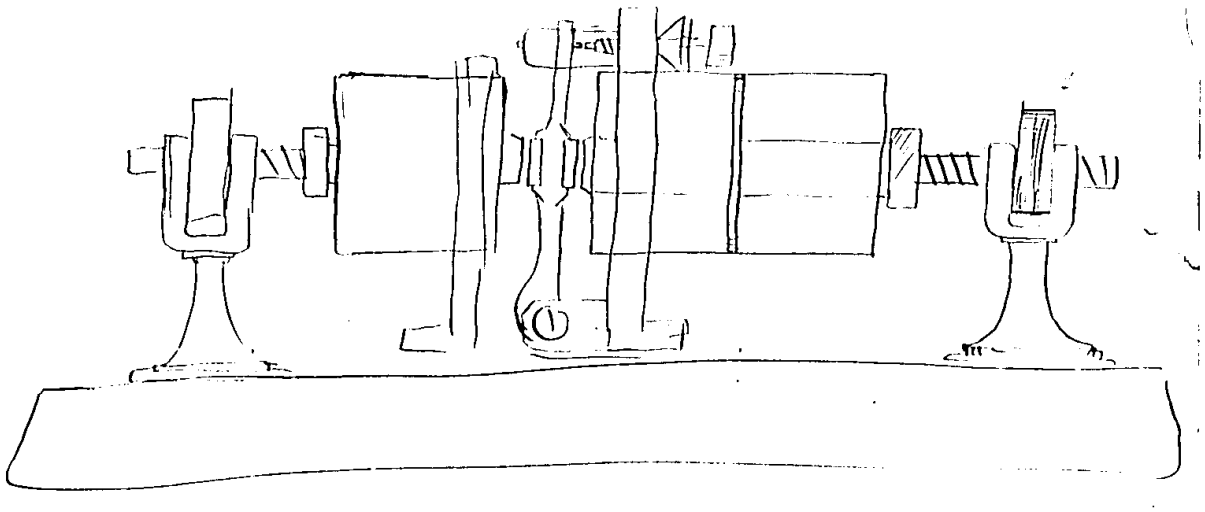
p. 114





One

114 ①



114 ②

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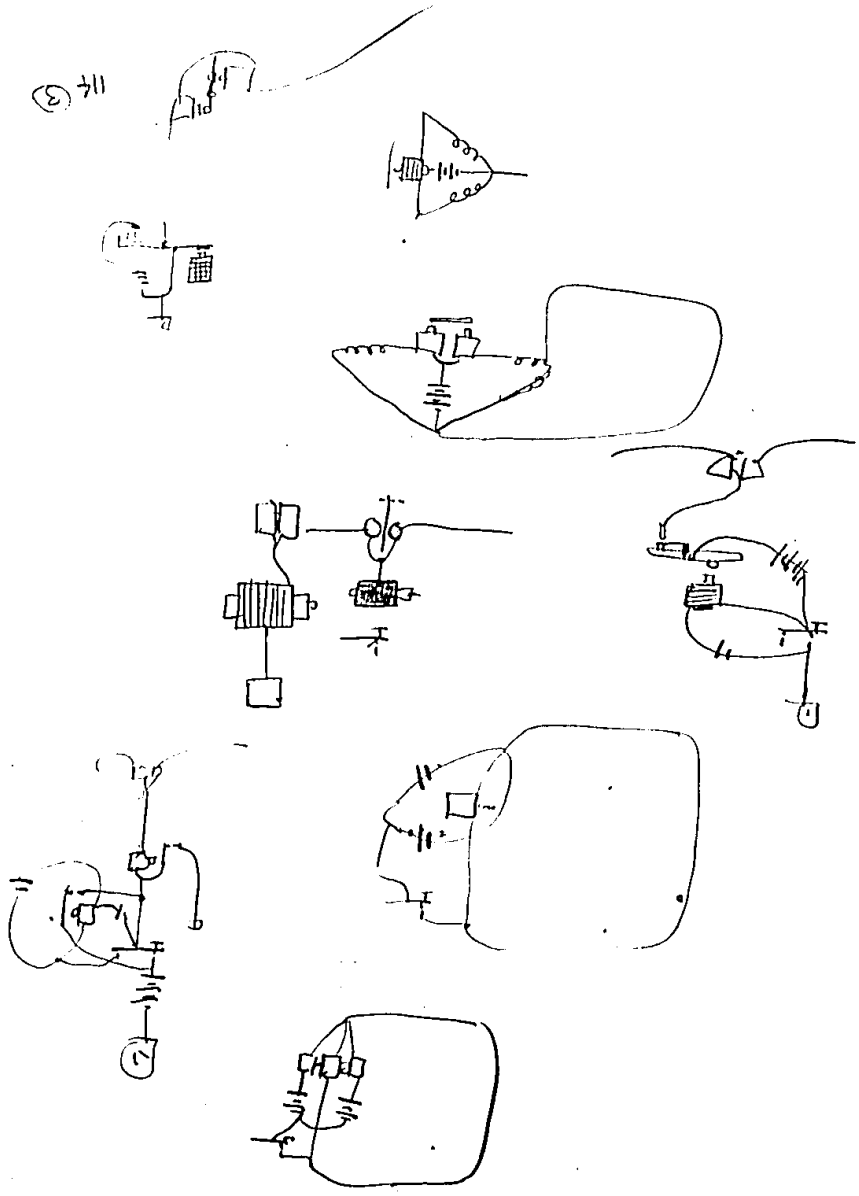

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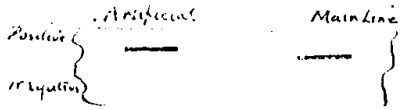
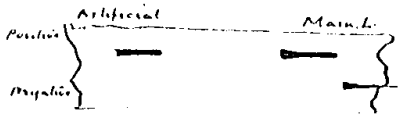
7 Duplex.

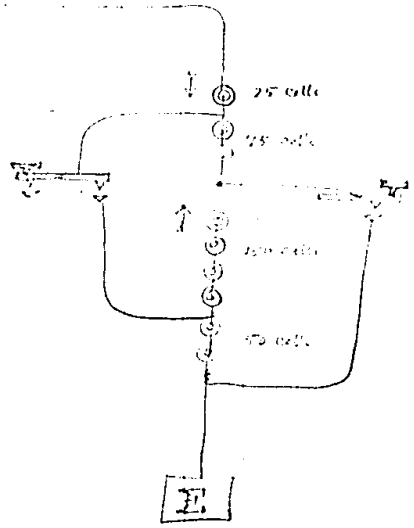


If the main line has considerable electrostatic capacity the record will be as shown in fig on closing and opening



115C

Gives 25 volts permanent
" 100 volts for instant



115 12

50 volts. Grove
16 lines total
281 ohms
or instant key
75 ohms

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Breakwheels for reversed currents with 2 batteries

A is a tooth wheel on which the levers B & C alternately make contact & ~~being~~ are so placed that when one is on a tooth the other is in the space; as will be seen by the connection of the two batteries in fig 16 when C makes contact a negative & when B makes contact a positive current is thrown to line. These breaks are liable to same defects as single current breaks

Fig 17 shews another method

B is a tooth wheel giving motion to the vibrating lever C which carries two platinum points on its end. DE are contact springs which rest against the stop pins r m By the rotation of wheel B the lever C makes connection with DE alternately throwing reverse currents to line

Breakwheels for reversed currents with one Battery. Fig 18 shews a plan.

A is a tooth wheel which vibrates two contact levers C & B one of which is on a tooth when the other is in a space. Thus:- when C is on a tooth the point E is not in contact & B being in space point D will send a current to line, & when B is on a tooth & C in space contact made at E will send a reverse current

Fig 19 shews another method:—

In this plan F & G are 2 contact springs one connected to each end of a battery & resting against the contact screws E & D. The vibrating lever B carries a crossarm C on its end which when it vibrates disconnects F & G alternately from their respective contact screws. Throwing reverse currents to line.

115 (+1)

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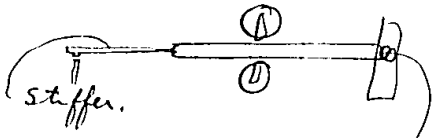
J. C. REIFF, Sec'y & Treas. GEO. HARRINGTON,

OFFICE
Automatic Telegraph Company,
No. 80 BROADWAY.
New York, 187

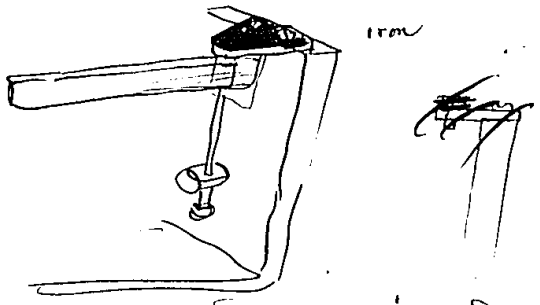
Page 4.

These paloniged relays are to have stiffer brass longue projections

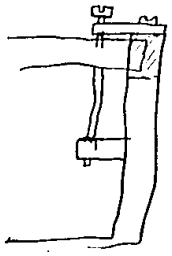


Platina points to be of hard drawn platina

provided thus



116 (1)



also rewind these paloniged relays & make them 200 ohms each with one layer of 23 wire on last. & add two extra binding posts for this wire, - wind it on both spools.

116

...ser
various
which there is
that it passes
...l process entirely
...ases of solubility and
" " " acid in the finish
several foreign p...ucts
...ion etc which

1 a sulpha

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REIFF, Sec'y & Treas. GEO. HARRINGTON, President.

OFFICE
Automatic Telegraph Company,
No. 80 BROADWAY.

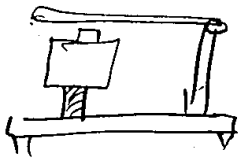
Page 3,

New York, 187

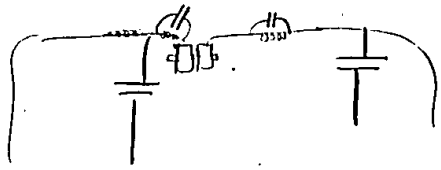
to be the same as an ordinary morse relay of if this be inconvenient to obtain the resistance required, then diameter may be the same as a Duplex Spool,
The platina points to be small and with hard drawn platina, The platina used on previous instruments is so soft that it creates too much oxide,

Three of these relays are to be made,

four more shortened sounders like sample,



117 (1)



Except Kinic,

oxalic acid contains more O. than any other known organic compound — it is also the most powerful of Probably on account of the excess of O. — Lots of O. ClO_7 or perchloric acid,

Radicals or elementary Organic Nuclei, consisting of Carbon & Hydrogen two greek for matter, Those which contain C & N. generally end in an or anogen which contain C H & O. end in ene as Indene

Many oxides and acids contain water so intimately combined that it cannot separated from the by heat. In acids this HO of Hydration or basic H the place of a base. (*) it acts like an oxide that would form a sa Not given off until a strong salt-salifiable base such as KO PbO is introduced — degree of heat required varying according to the natu in which case after the HO has been expelled a compound of the true o acid with the base remains, Thus the lowest state of hydration to w acid can be brought is Glacial acetic acid, This formula is but combined to form acetate of potash we have KO, C_4H_3C hence it has 1 Atom of H.O. ~~and to form it to a hydrate of~~ ~~when hence its formula should be HO, C_4H_3O~~, hence pure ac acid as shown in the dry acetate of KO. must be C_4H_3O acetic acid Anhy- consists of an elementary radical "c Acetyl". C_4H_3 combined with 3 ats of O. to form an of this Compound radical C_4H_3 be called Ac then we the similarity between Organic & inorganic acids, thus s $HO.SO_3$. acetic a. HO! AcO_3 Sulphuric KO SO_3 Pot HO,AcO_3 Generally these elementary radicals c obtained with separate state, as they are so liable to when separated from their other bodies, just as Anhy Nitric acid is unknown in the separate state, yet it is assumed — Watts in a foot note says that the nu Organic radicals known to exist in a separate state is c increasing. Radicals are capable of taking up more than atom of O. Kinic acid contains besides the radical 9 atom of O. thus Excels Oxalic acid, Radicals are Compounds in which all the properties of the elementary bodies reproduced several of them as cyanogen play the part of c oxygen. others such as methyl, Benzoyl etc resemble chemicals In mineral chemistry the radicals are simple in Organic they are Compound,

Gray Cast iron when nascent Hydrogen is evolved on it free gives an oil, Vol. 1. Organic p 39.

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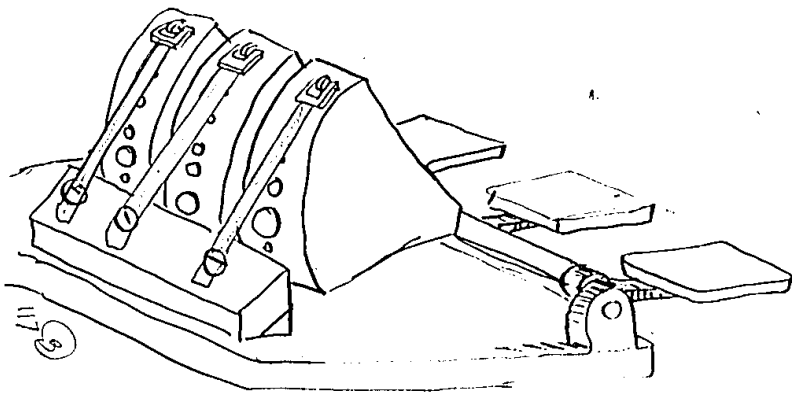

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Working Model of a Perforator claimed and believed to be the invention of Mr J. F. Grace was brought to my office during the latter part of November or early in December 1870 and left with me to await the result of Thos A Edisons attempts to complete his invention of a perforator. Mr Grace claiming his Machine as equal to about twenty words and Mr Edison expecting from 20 to 30 words from his.

Remained with me until April 1871 when it was taken to Shop in Newark.

Edisons perforators were brought to 64 Broadway

Graces Model for perforator for Patent Office was completed as per bill aug 12, 1871.

~~Edisons~~ Craigs agreement with Grace ~~Craig~~ ~~is dated~~ is dated aug 13. 1870

Craigs agreement with Edison is dated 3rd aug 1870.

117 (A)

117

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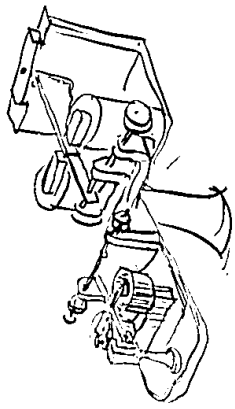
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

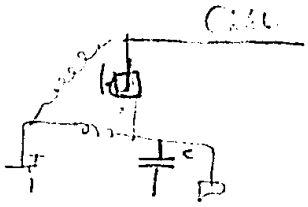
118



The Operator.

The journal of the telegraph Operator in the city of New York, Published on the first and 15th of each month, and sent postpaid ~~Subscription~~ Conceptions from any part of the US for — cents per ~~month~~ month, — cent, 6. mo + — cent 1 year; ~~the~~ on receipt the 1st of Sept the journal ~~will print~~ devote a large portion of its space to the publication of original scientific articles written in a clear understandable style without technical phrases or algebraic formulae ~~workings out~~ with illustrations; ~~Communications on scientific subjects~~ ~~[illegible]~~ Communications ~~and~~ ~~[illegible]~~ for sample copy address Allen & Lobeck.

362, Motor ~~[illegible]~~ Circuit, Sounder Chapter



Note 2.

= It is generally supposed by telegraphers that sounder point will close a main circuit better than a relay point, If a piece of gold leaf be suspended to a ~~per~~ copper wire connected to a local circuit in a sounder be touched by a wire ~~connecting~~ forming the other portion of the ~~world~~ the ~~sounder the local circuit will not be completed~~, the sounder will not close, If now the main circuit be substituted for the local circuit, it will close on touching the wire with the gold leaf — This shows that a

119 (3)

119

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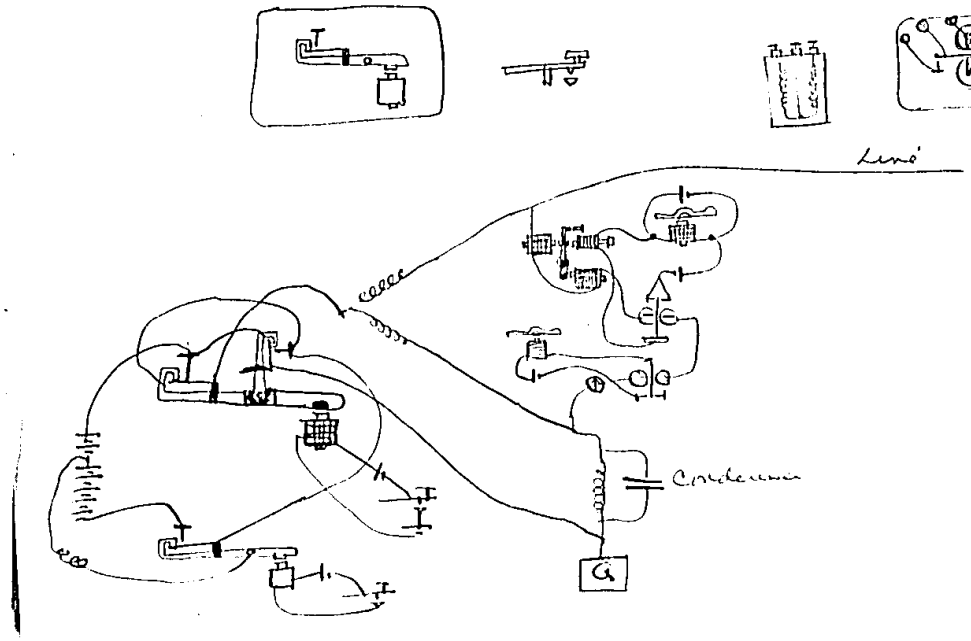

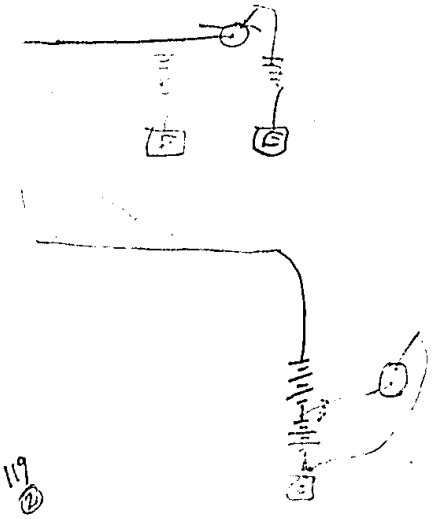

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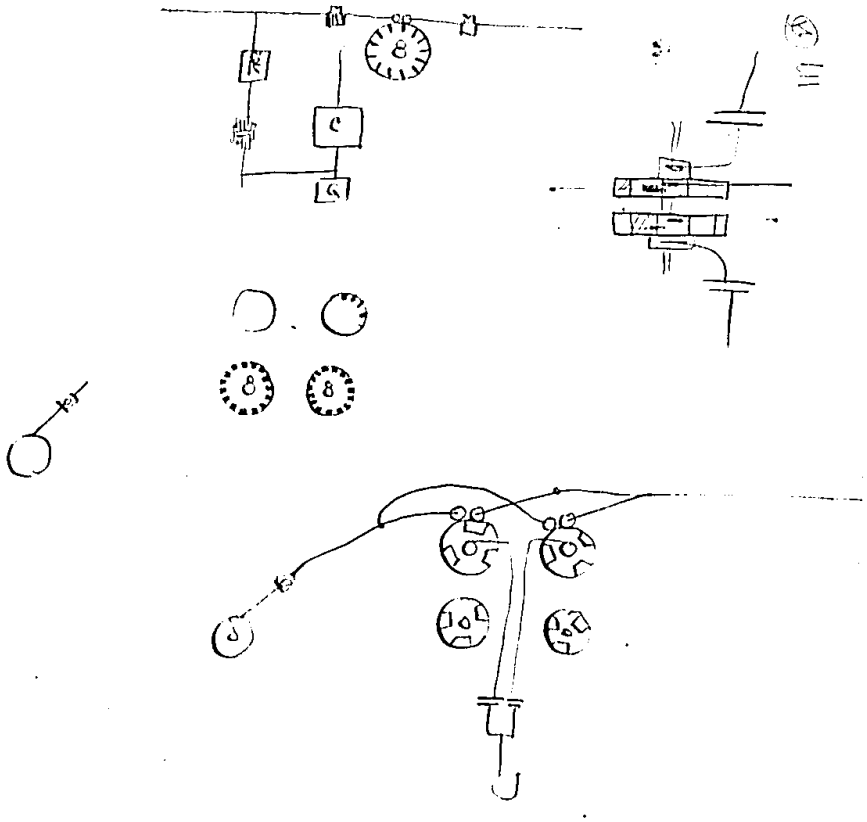

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/

~~Mr Hall~~

There is an extra phenomenon with the electrical duplex which we do not see in the Water duplex, which is due to what static induction, The effect of which is to destroy the balance ~~for~~ between the main line coil and the coil in the artificial line. In sending a ~~cross~~ dash for instance through the differential relay to the distant station the static induction current of the line is added to the regular current thereby increasing the strength of the first part of the signal within the main line relay, while the artificial line being free from these currents is not thereby increased, hence the cores of the differential relay will become magnetic ~~V/Bt~~ by this excess of current, and the lever will be attracted for an instant only, or "kick" as the operators say, now it follows that if we could by any means create a static induction current upon the artificial line equal to that of the main line, that the two currents would balance each other within the differential relay, Mr Stearns was the first ~~proved who~~ to bring about this necessary result, and without which previous apparatus were impracticable, in ordinary lines of ordinary length ~~impractical at all because impractical~~, Mr Stearns obtained this result by adding a Condenser to the artificial line, a Condenser consisting mainly of a large number of sheets of tin foil or other metallic surfaces connected to the ~~Artificial~~ line, facing an equal number of sheets of tin foil connected to the earth, these plates are separated by sheets of insulating material, usually paper dipped in hot paraffine, ~~when~~ ~~The greater the length of the~~ main line, ~~as well as the~~ the higher the resistance

120 (1)

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We ~~commence in this number the publication~~ reprint ~~this~~ from in this number the first of a series of ~~series of~~ of a very valuable ~~and~~ and original article ~~taken from the~~ on Duplex and Quadruplex Telegraphy taken from the Columns of the ~~Columns of the~~ Operator, ~~on Duplex Telegraphy~~ a journal devoted to telegraphy which has been published in this city for a year past but which has just entered the field of science and if the reprinted articles as well as other original and valuable ~~scientific~~ matter which appeared in its first scientific number is to be taken as a criterion of what is to be in the future we bespeak for it a liberal patronage from the telegraphic fraternity.

We reprint in this number of the journal the first of a series of original articles on Duplex and Quadruplex telegraphy taken from the columns of the Operator, ~~a publication devoted~~ a journal devoted to telegraphy ~~a paper that has been~~ published in this city for a year past, ~~but~~ or which for the first time devotes a portion of its space to scientific subjects ~~has just entered the field of science~~. If the reprinted articles as well as the other original matter which appeared in its first scientific number is to be a criterion for the future ~~we~~ ~~[illegible]~~ it can [illegible]

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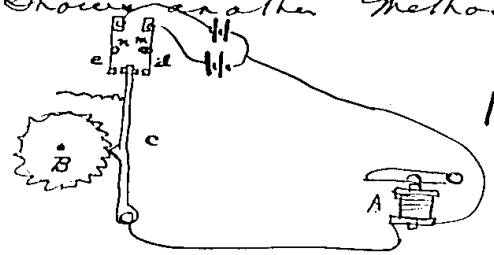
14 Bk wheel

It will be unnecessary to describe the defects of this class of breaks as they are liable to the same defects as the Single Current breaks,

Fig Shows another Method.



14

B is the notched wheel to give motion to the Cover C. which is platina tipped, d e are two Contact springs which may be double as in fig ——
resting against the stop pins n m.
By the vibration of the cover C against one spring & the other the Z or C Battery is thrown alternately in the Circuit.

120(2)

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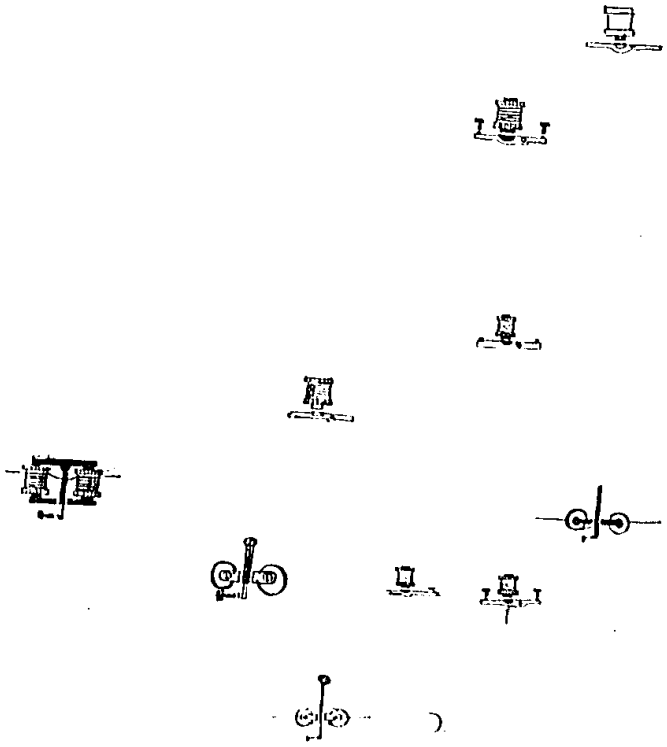

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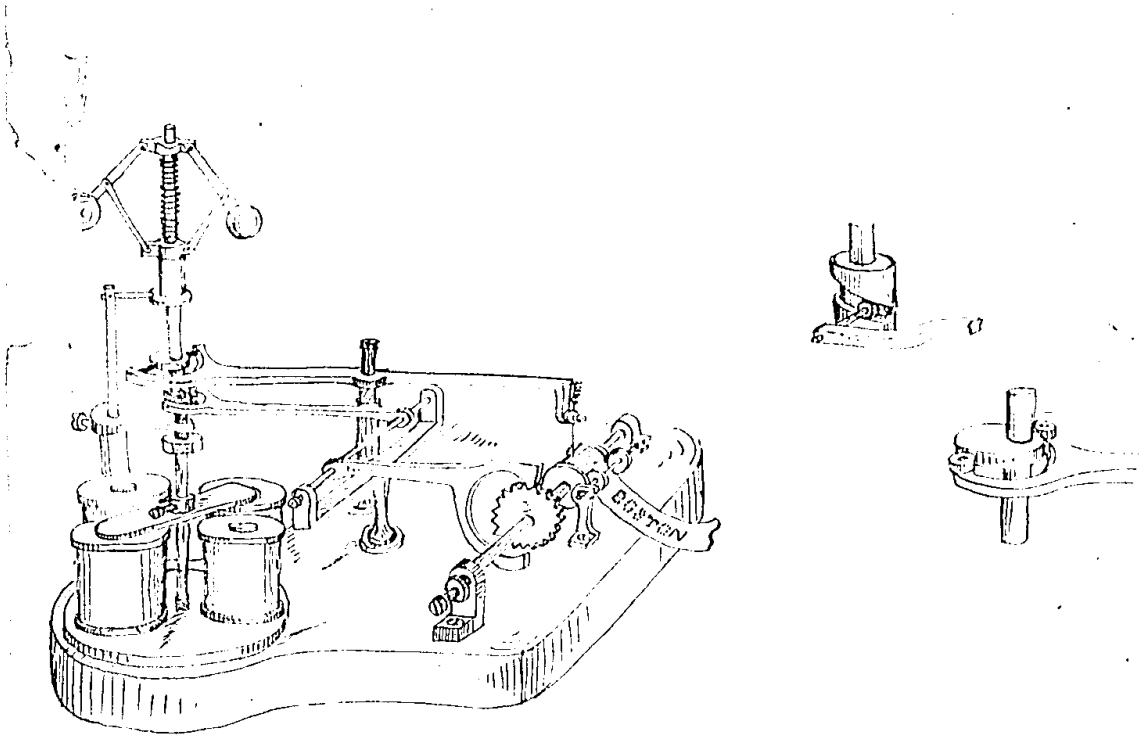

3

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CUPRO-AMMONIUM – Desolves Ivory bone or any varietie of figure, and silk at the rate of a yard a minute
Very curious compound.

122 2

4 lbs concentrated aqua Ammonia .880 specific gravitie
Glass bottle of a size which will be half full when the ammonia is put in.
~~Then immerse .8 copper wires No 23 in the liquid.~~
It immediately acquires a blue tinge.
Shake every 3 days or oftener for 6 weeks and allow very free access of air to it every time it is shaken, use a cork, at the end of 6 weeks is ready for use.
American Artisan p 251 April 17 1872.

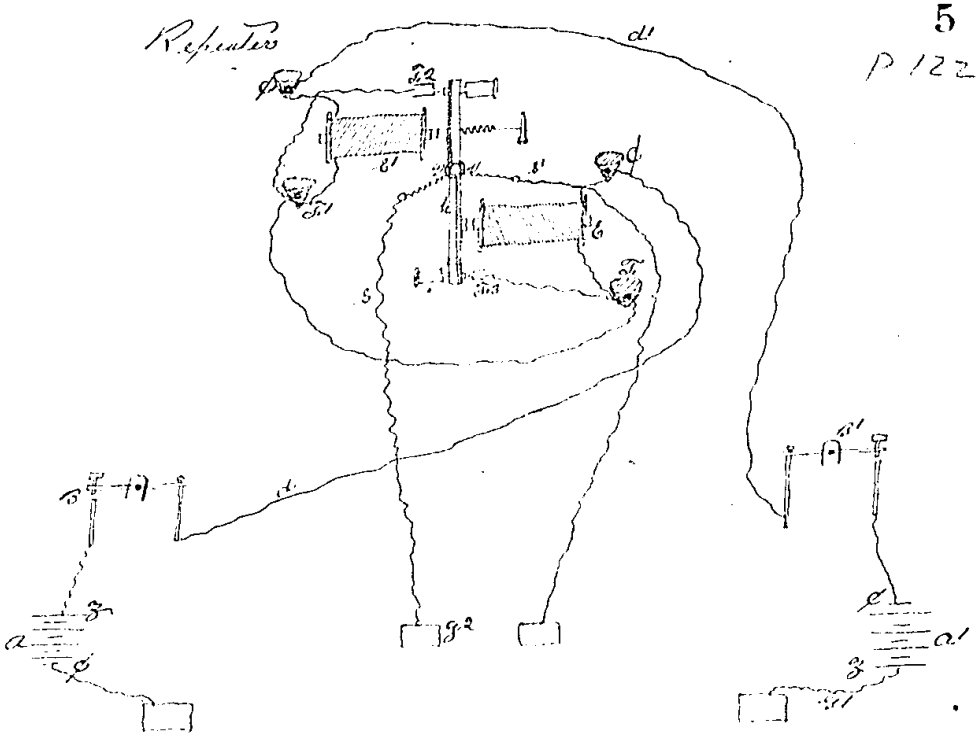
PRUSSIAN BLUE. is dissolved by rainwater acidulated with oxalic acid

MURCURO-TYPE. Desolve a small quantitie of iridium, or platinum or other metals in Nitro Muriatic Acid, Soak paper in this solution and hold it over the fumes of Mercury It it instantly colors it black and is indelitable.
Harpers Mag May 1872 p 940

122 3

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

Repeater



This drawing represents Battery Keys relays and ground connections for repeater on long circuits ready for operation Let a be one battery with wire to line closing key B we have current going to binding post F through relay E to binding post F' then on through binding post G through relay E' to post G' to line d' completing circuit by going through key B' (supposing key B to be closed) to Sounder of battery a' and from battery to ground through wire g'. The attractive force of the relays being the same when there is a current going through the lever h is attracted equally by each relay coming in contact with the points F2 G2 breaking ground connection through the metal arms m m' and on wires g g' letting the lever h fall back to place again the magnetism in one relay alone not being sufficient to hold lever there by completing circuit from battery a to ground at g2 Both keys being closed the lever is equally attracted each way completing its circuit through their respective ground connections on lever h

122 (1)

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

SUPPLEMENT TO THE OPERATOR.

Fig 1

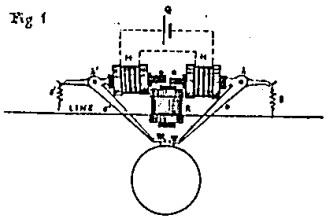


Fig 7

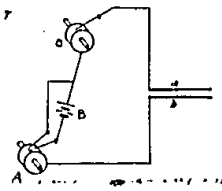


Fig 8

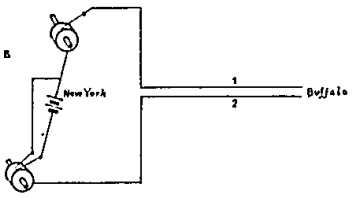


Fig 2

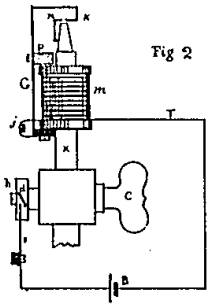


Fig 5

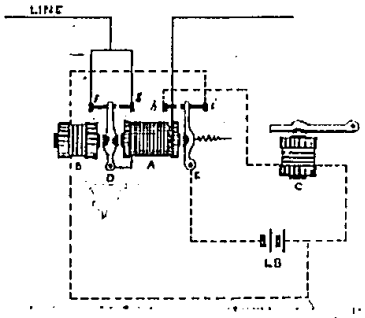


Fig 4

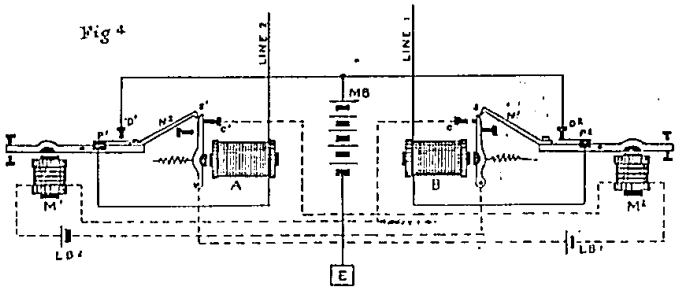


Fig 3

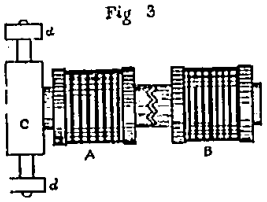
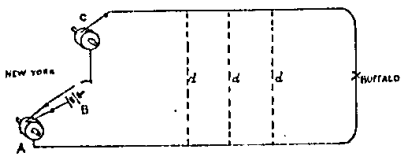
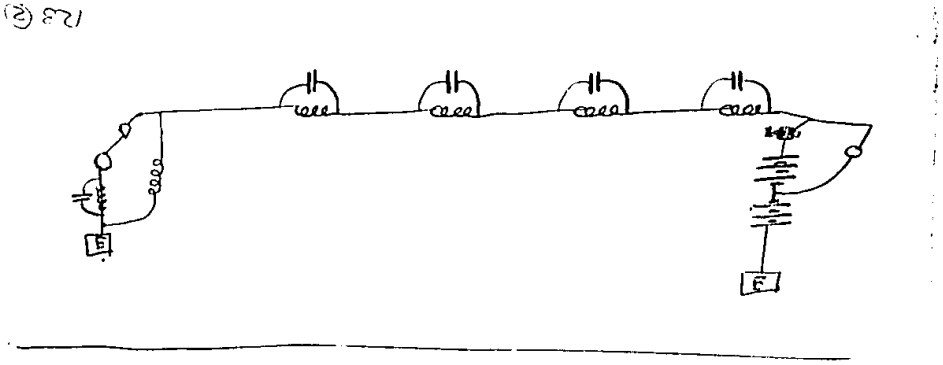


Fig 6

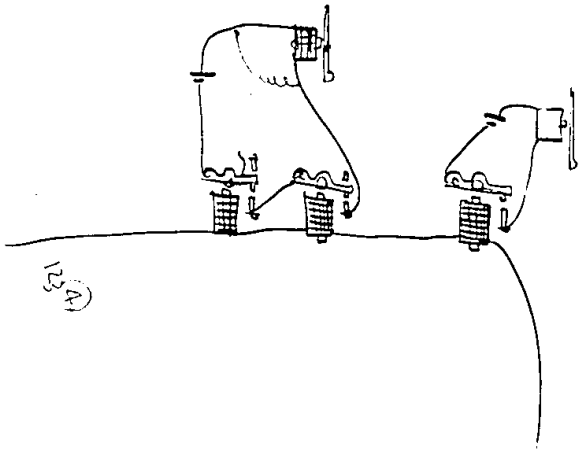


123 ①

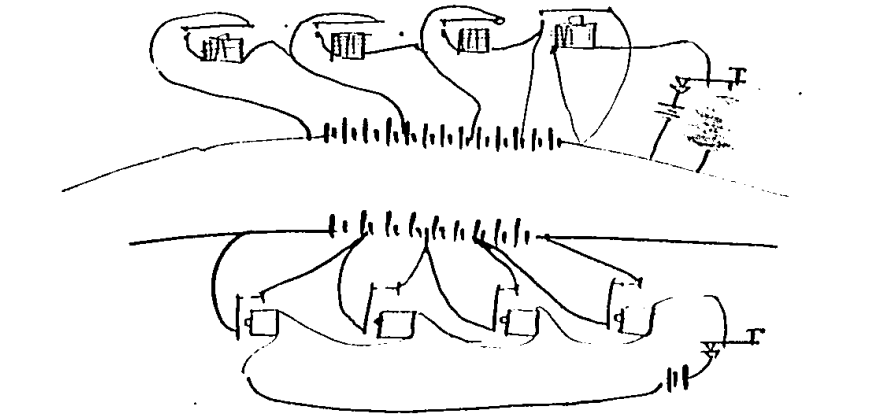
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

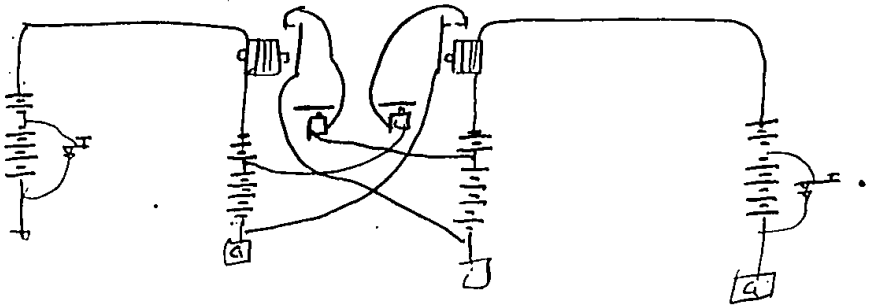


123(A)



123(B)

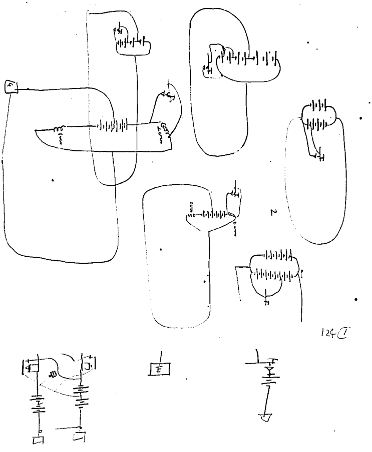




123(C)

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

124



124 (2)

To American Telegraph W[orks]
Manufacturers of
Telegraph Machines, Small and Accurate M[achinery]
No. 103 New Jerse[y]
Newark, N. J.,

I submit the following problem to your many readers for solution,

Transmit into a closed circuit of ~~any~~ positive and negative currents from a battery all the poles of which are connected up in the ordinary manner; ~~and~~ ~~both~~ using a common morse key to which no extra points or appliances whatever are to be added. No extraneous devices other than the simple battery and key are to be used except connecting wires. I enclose a ~~correct~~ diagrams ~~showing the connection~~ & [illegible] solving problem, Thos A Edison

Newark Nov 25 1874

← See also Telegraphic Journal & Electrical Review—Vol. 3, 1875 Jan. 15, p. 23 M.C.B.

50 w
35 w.
$3\frac{1}{2}$ ohms
7600

1800 × 3 = 5400
900
63 1800 × 4 = 7200
7.
1800 × 6 = 10800
7,000
7200
14400
12600
1 18000 × 4 = 72000

1
15
700
10500
2400
12900
9600
22500

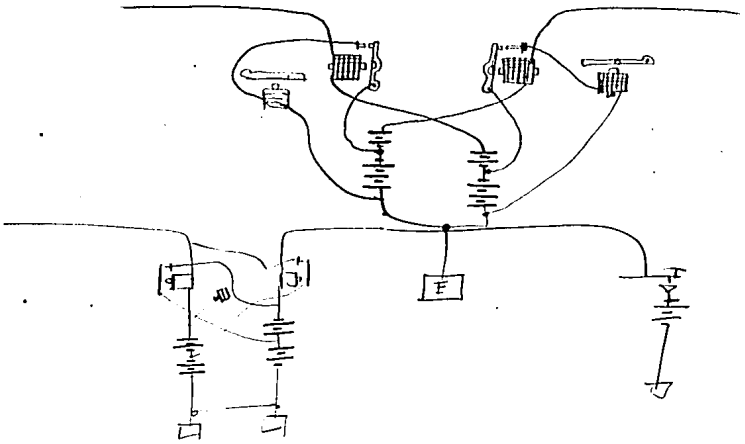
800 × 7 = 5600
7000
12600

124 (3)

Terms,

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

124



124 (2)

To American Telegraph W
Manufacturers of
Telegraph Machines, Small and Accurate M
No. 103 New Jerse
Newark, N. J.,
Terms,

I submit the following problem to your many readers for solution;

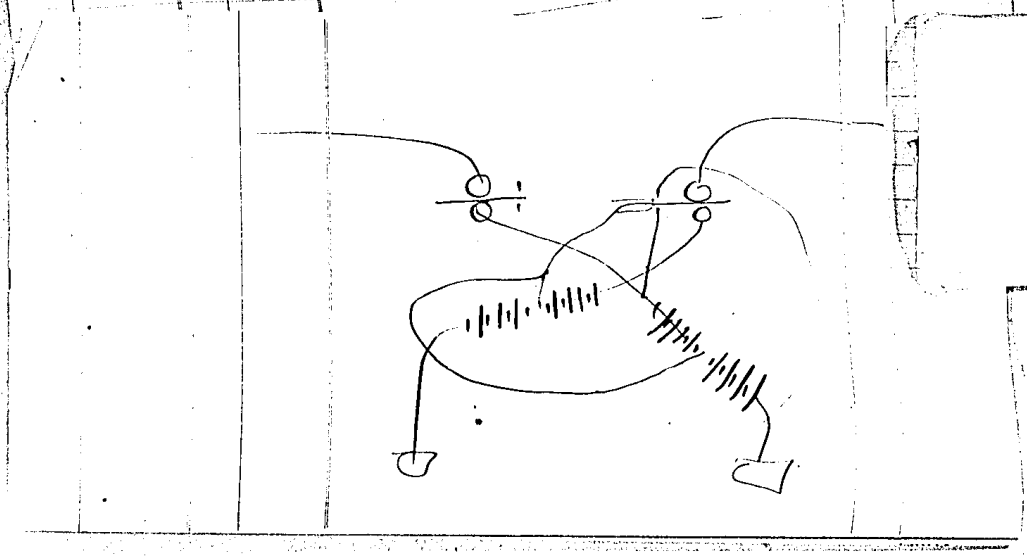
Transmit into a closed circuit ~~of any~~ ~~[illegible]~~ positive and negative currents from a ~~some~~ battery ~~the Copper~~ ~~and~~ all the poles of ~~the~~ which are connected up in the ordinary manner; ~~and with~~ using a common morse key to which no extra points or appliances whatever are to be added. No extraneous devices other than the simple battery and key are to be used except connecting wires. I enclose a ~~correct~~ correct diagram ~~[illegible]~~ of the ~~[illegible]~~ solving problem, ~~[illegible]~~ of which is

Thos. A. Edison

Newark Nov 25 1874

← see also Telegraphic journal + Electrical review Vol. 3, 1875 Jan. 15, P. 23 M.C.B.

124 (3)



124

To American Telegraph Works, Dr.

Manufacturers of Telegraph Machines, Small and Accurate Mechanism,

No. 103 New Jersey Railroad Ave.

Newark, N. J., 187

Terms,

To the Editor of the Operator

I submit the following problem to your many readers for solution,

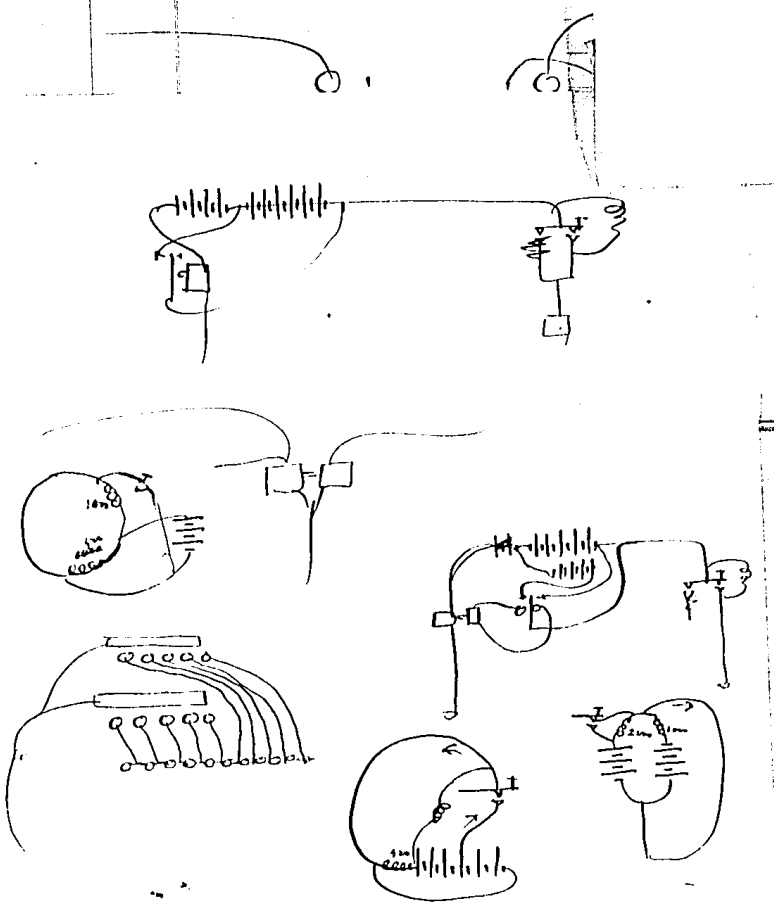
Transmit into a closed circuit of ~~any~~ ~~reversed~~ positive and negative currents from a ~~one~~ battery ~~the Copper~~ ~~and~~ all the poles of ~~the~~ which are connected up in the ordinary manner; ~~and both~~ using a common morse key to which no extra points or appliances whatever are to be added. No extraneous devices other than the simple battery and key are to be used except connecting wires. I enclose a ~~correct~~ diagram ~~showing the~~ ~~shunt solution~~ ~~of the~~ ~~problem~~ ~~of which~~

Thos A Edison

Newark Nov 25 1874

← See also Telegraphic Journal + Electrical Review Vol. 3, 1875 Jan. 15, P. 23 M.C.B.

124 ③



124

← See also Telegraphic journal + Electrical review - Vol. 3, 1875 Jan. 15, p. 23 M.C.B.

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THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

125

NEWARK, N. J.,

TO AMERICAN TELEGRAPH WORK

MANUFACTURERS OF

TELEGRAPH MACHINES, SMALL AND ACCURATE MECHANI

Terms,

No. 103 New Jersey Railr

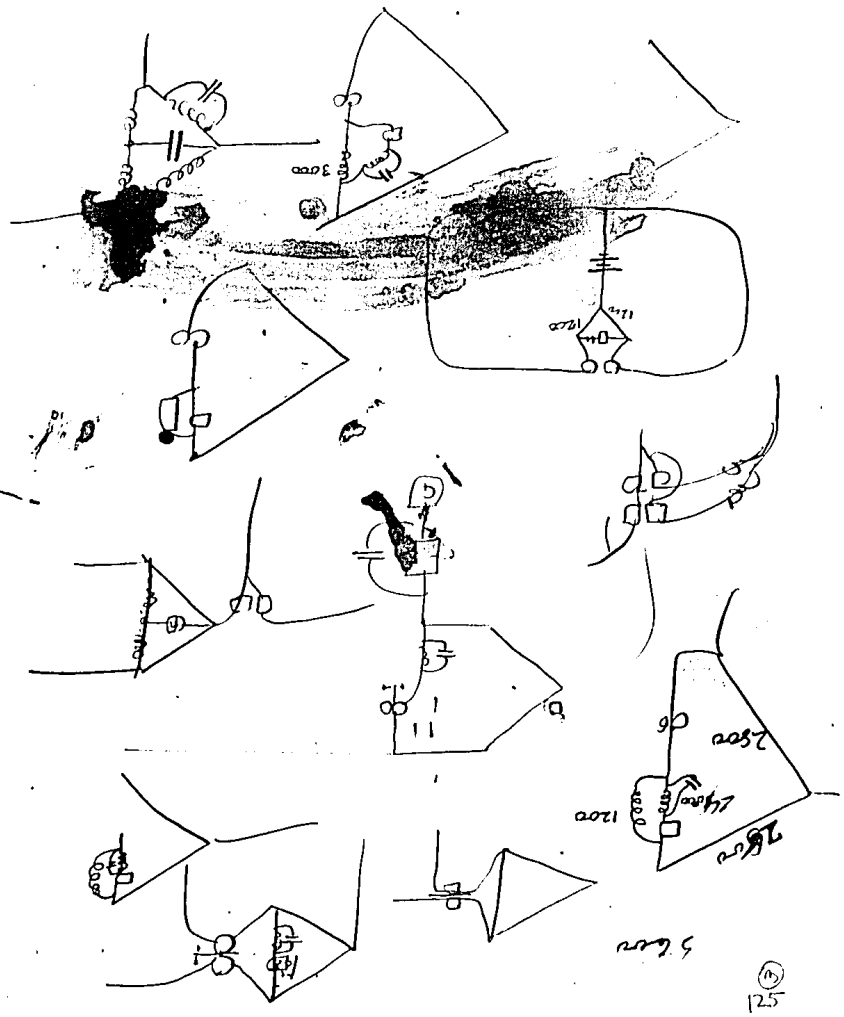


Fig 1

125

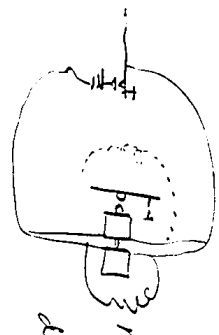
125

Newark, N. J., 187

To American Telegraph Works, Dr.

SM,

oad Ave.



differential

125

125

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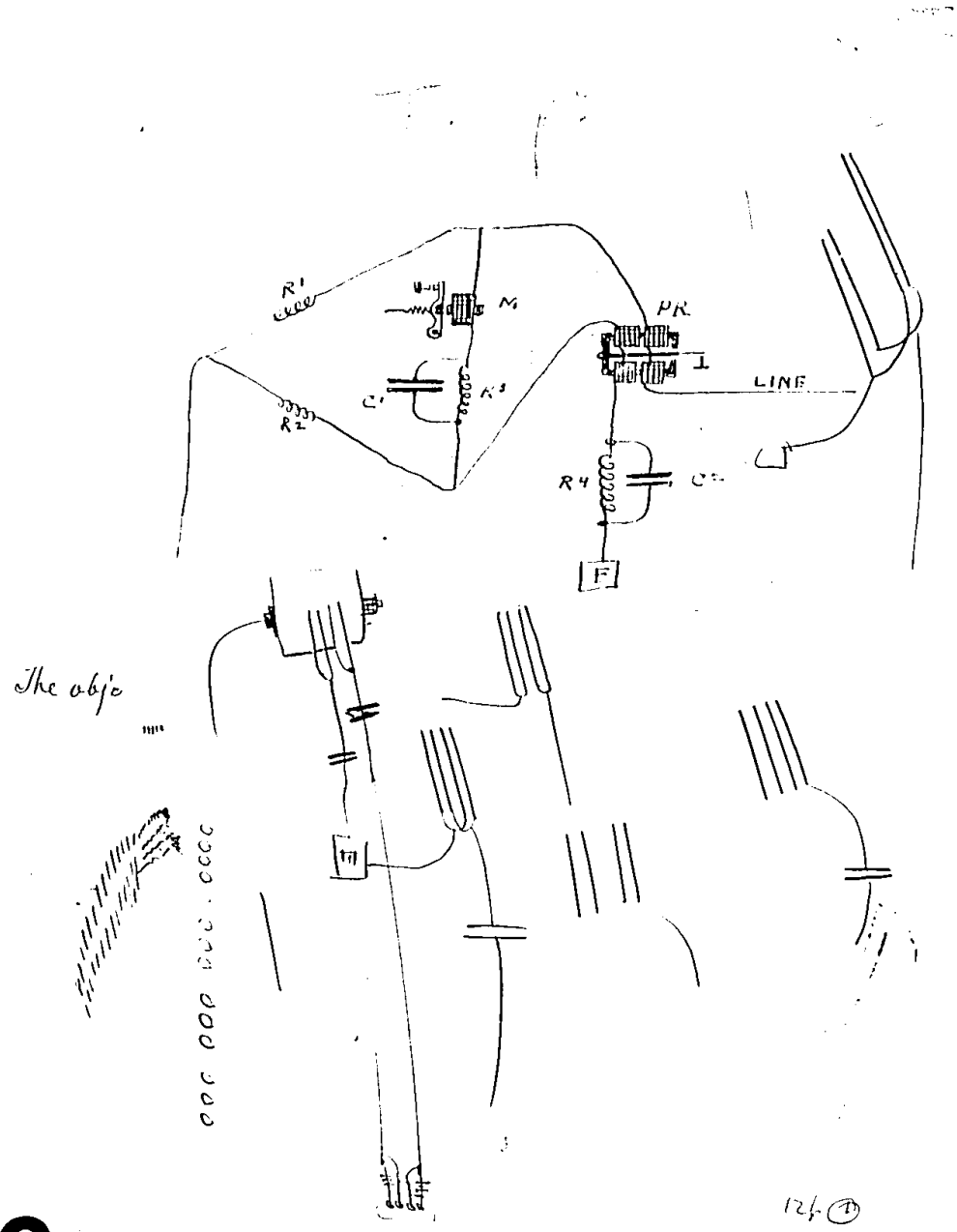
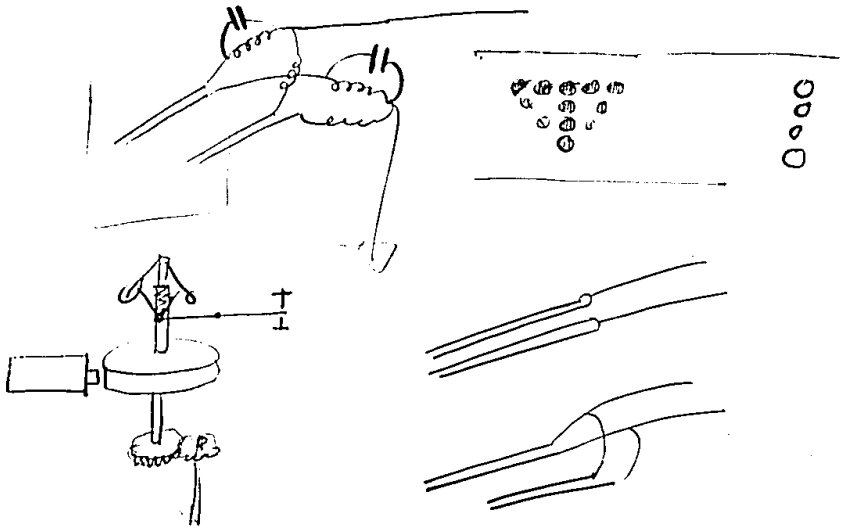
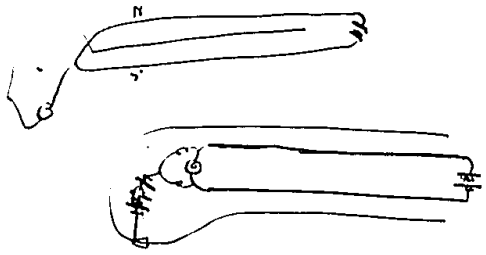


THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1



IMMEDIATELY
COME HOME TO



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7

when the main line is very short the as between NY & Phila static induction currents are insufficient to produce any movement of the lever of the receiving relay and it is unnecessary to add a Condenser to the artificial line to produce like currents, but when the line is long as between NYork and Buffalo, the static charge is sufficient to permit signally altogether without the addition of the Condenser to the artificial Line, and then it is required that a large number of sheets are used. Otherwise it will not set up currents of sufficient strength to ~~effect~~ maintain ~~produce~~ the balance, Another ~~necessary~~ essential feature to obtain perfect signaling was the addition of a small ~~second~~ resistance coil R². (see fig 2) on the Earth wire, This coil has a resistance equal to that of the battery so that when the latter is made part of the main line, that it will not alter its resistance, ~~were no coil used~~ it also serves to reduce the spark which is made on the ~~opening~~ points a. b. c. at the instant the battery is "short circuited" were no coil used, the resistance of the main line would be increased when the battery was inserted, and decreased when put to earth, This ~~increase~~ variation in the resistance of the main line would vary the strength of the received signals, while the battery was permanently closed the distant signal would be "light" and when open they would be heavy, This feature is also due to Mr Stearns, With these exceptions the Electrical & water Duplex is operated precisely ~~as the water Duplex~~ like

~~But the electrical Duplex may be operated in a different manner~~, One peculiarity of the Duplex is that it does not matter what poles of the two batteries are connected to the line, the effect is precisely the same ~~through the relay~~ ~~could be~~ ~~while~~

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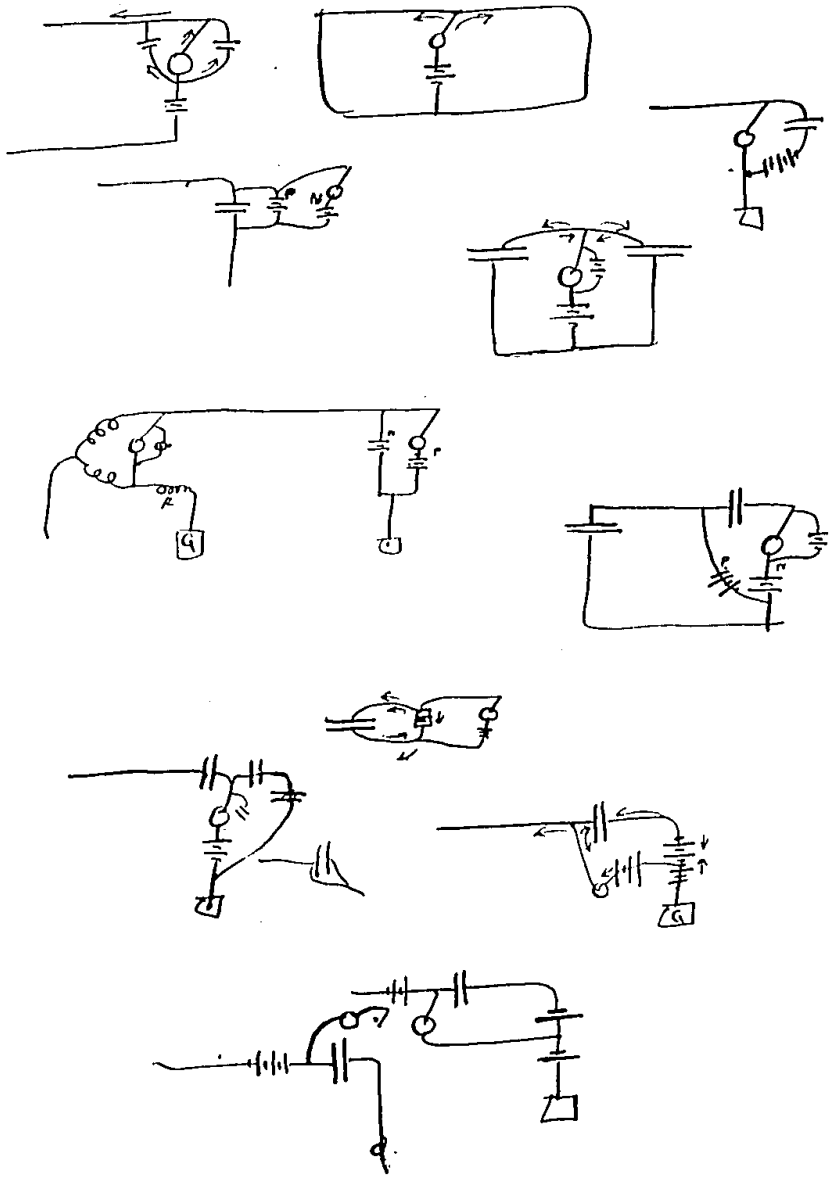
126



THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

Philadelphia:
310 CHESTNUT STREET.

Washington, D. C.:
1409 PENNSYLVANIA AVE.

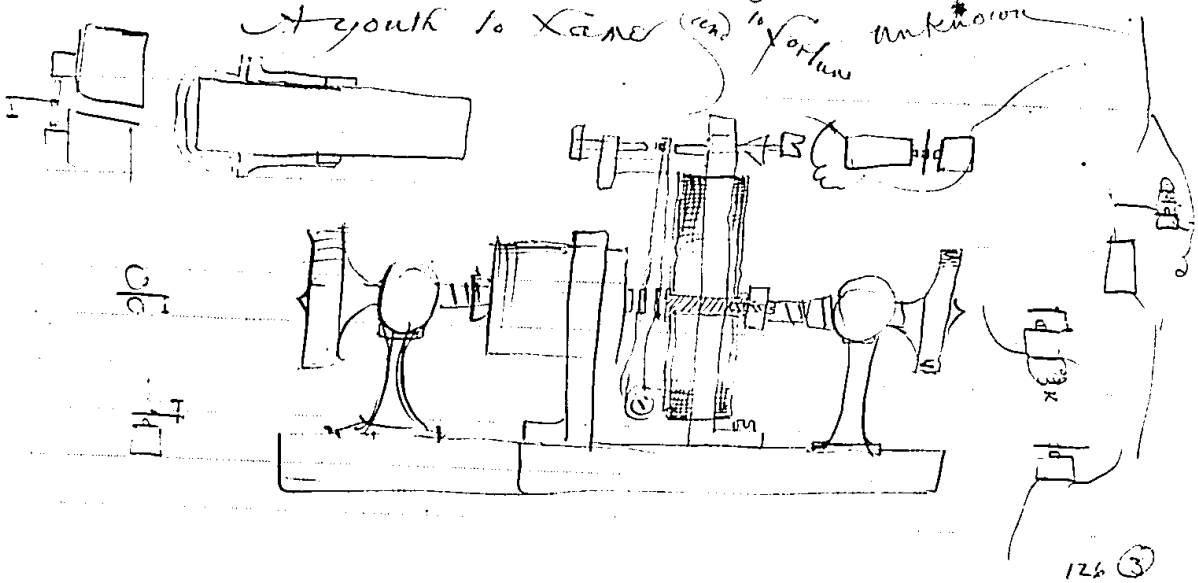
WILL PLEASE SEND THE FOLLOWING
FROM WASHINGTON, D. C.

Geo. Harrington,
PRESIDENT.

J. C. Reiff,
TREASURER.

To

Beneath
Beneath no stone
A youth lo Kane (?) lo York unknown



126 (3)

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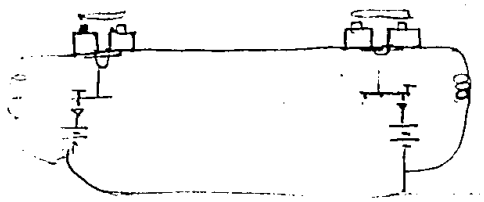
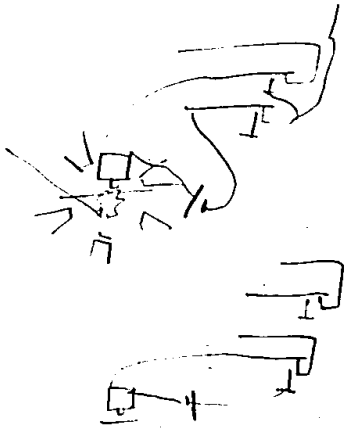
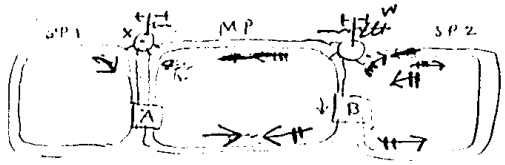
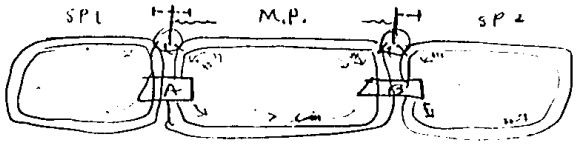
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1





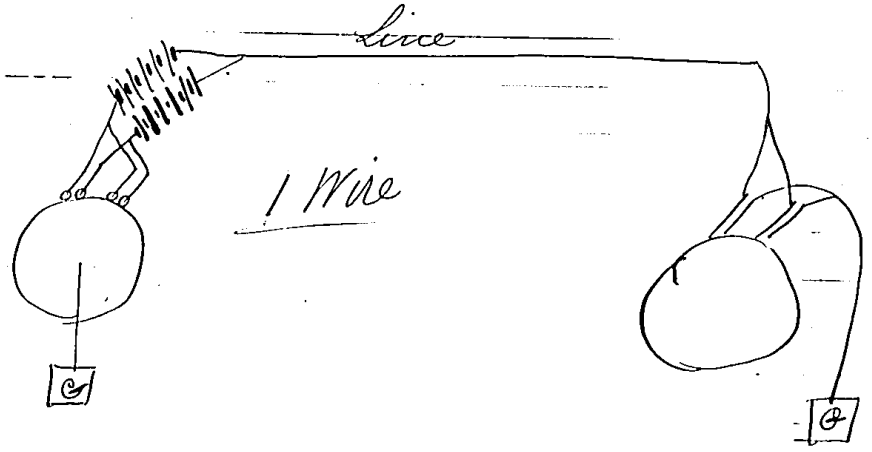
~~above station is worked partly by the battery at the distant station and partly by the air~~ for the signals from the distant station are partly made by the battery at that and the home station. The Water Display diagram will clearly show how this effect is obtained.





when no water passes from the reservoir A through the main or secondary pipes the water from B passing through the main pipe M.P. closes the lever of X to the left, and the local circuit is closed so to speak, but as explained before the ~~stream of water to~~ wheel W remains unaffected if now water is made to passes from A into the main & secondary pipes, ~~as shown~~ in the direction indicated by the unfeathered arrows the ~~water~~ this stream of water will act against the stream from B ~~and and both stream~~ the water will become still ~~the same effect X~~ ~~would be the same~~ the effect of this would be to allow the lever of X to be drawn to the right were it not for the fact that now [2]

(A) [2]



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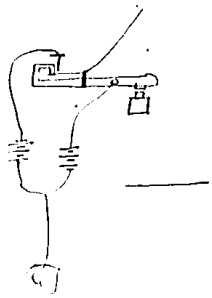

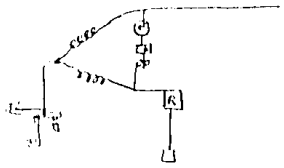

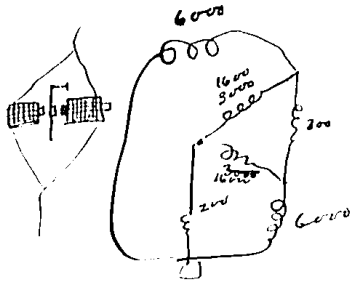

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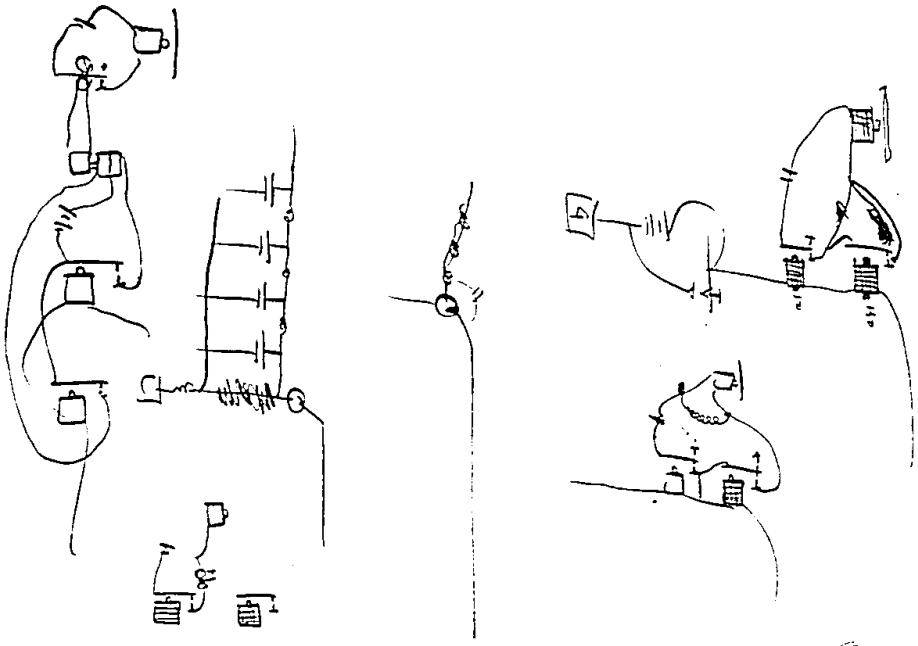
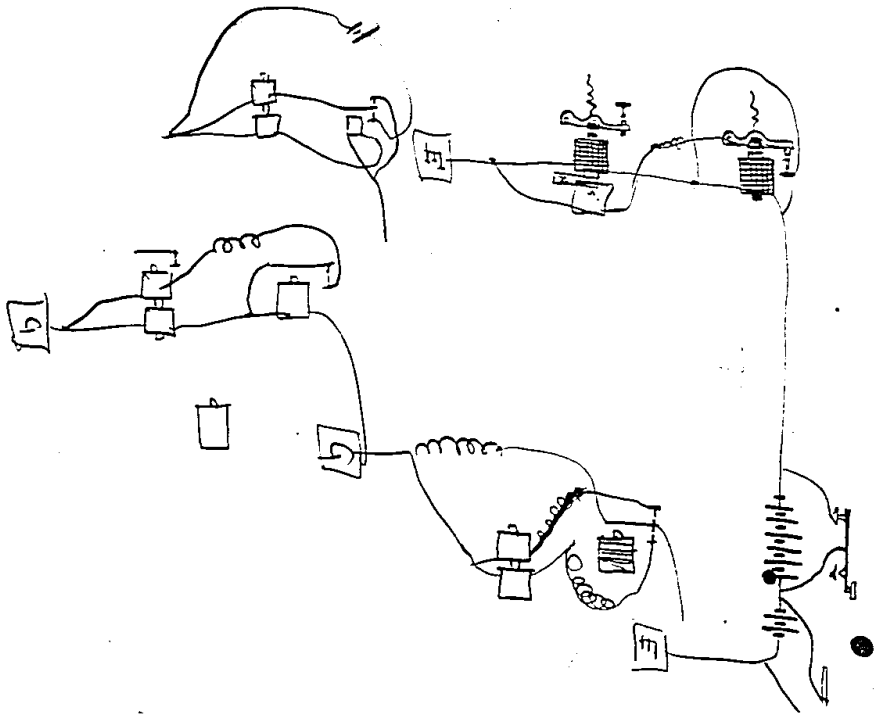
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1



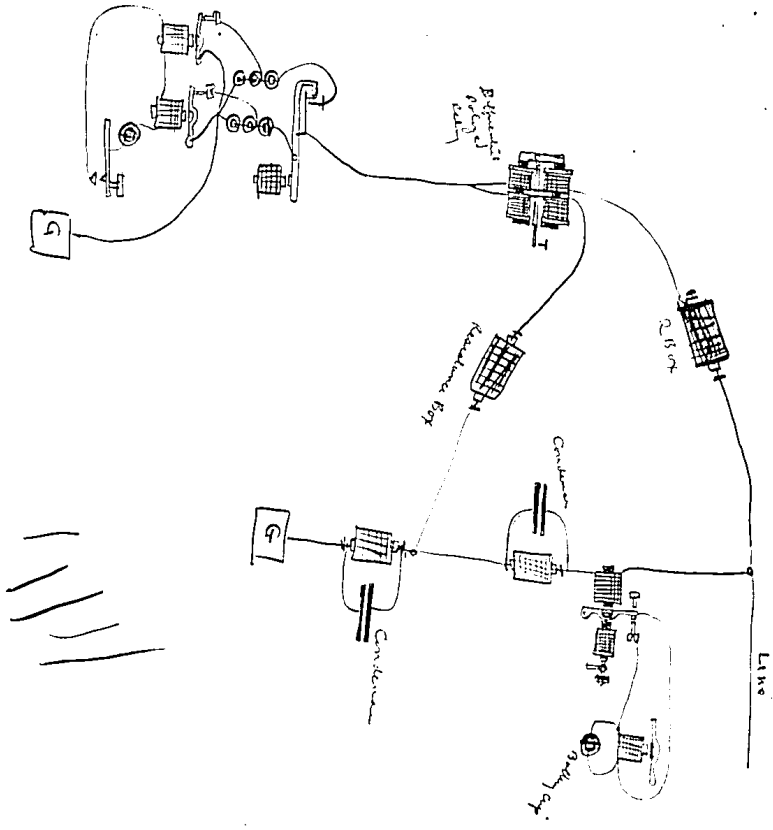
127 ②



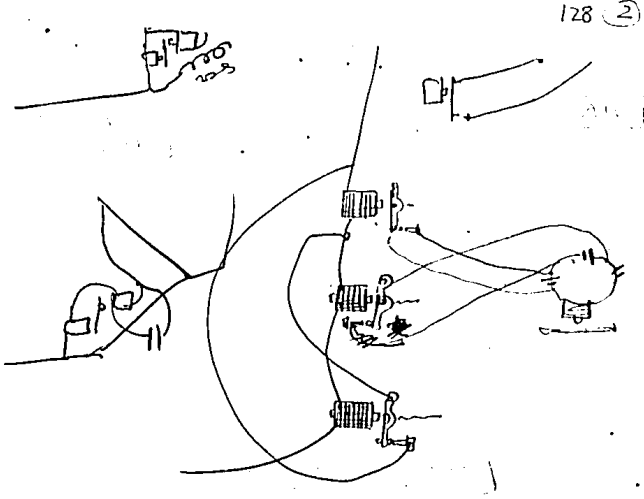
127 ②

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

128



128 (1)

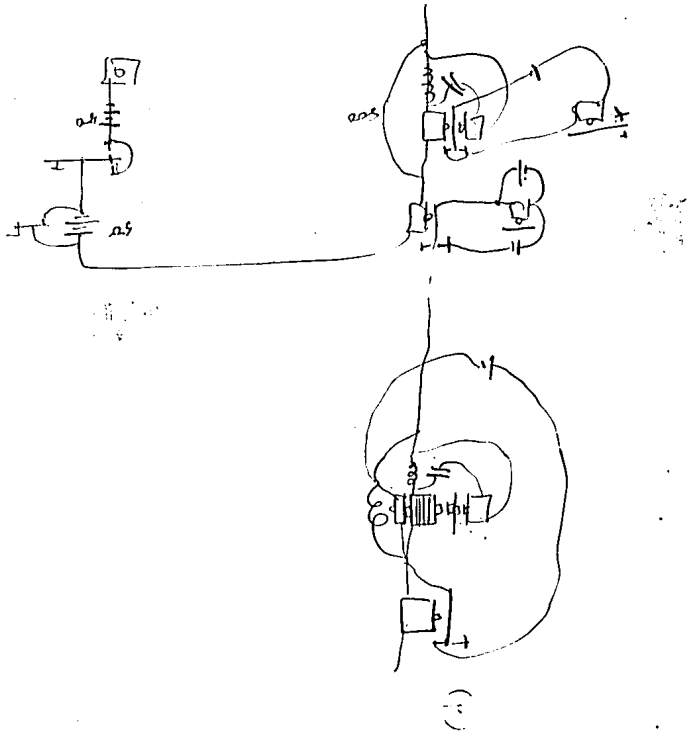


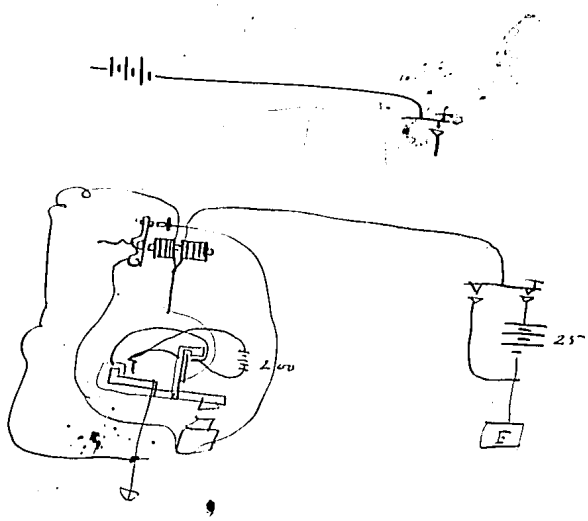
128 (2)

128 (3)

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

128





THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

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NEWARK, N.

TO AMERICAN TELEGR

MANUFACTURERS

TELEGRAPH MACHINES, SMALL AND 4(

No. 10

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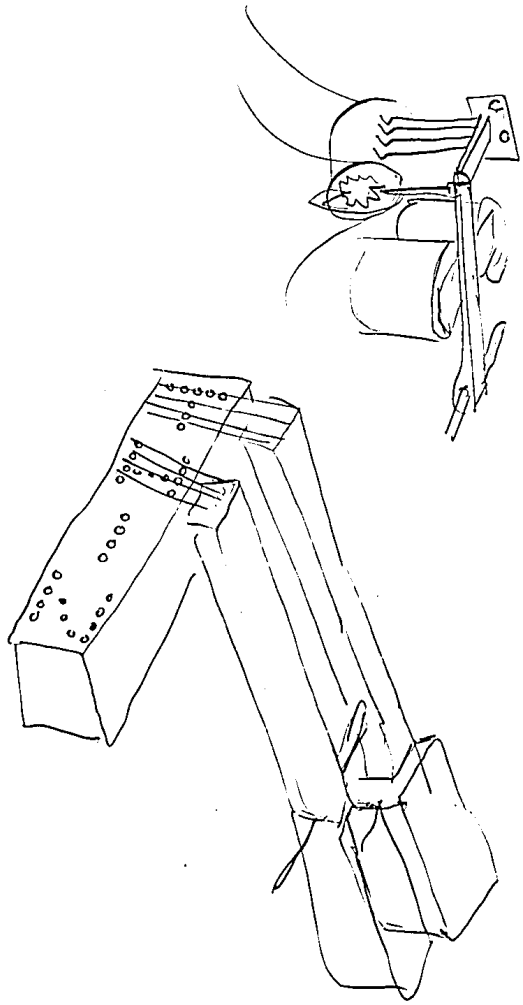

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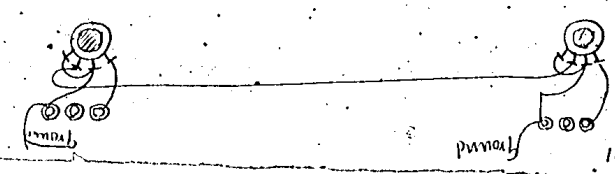

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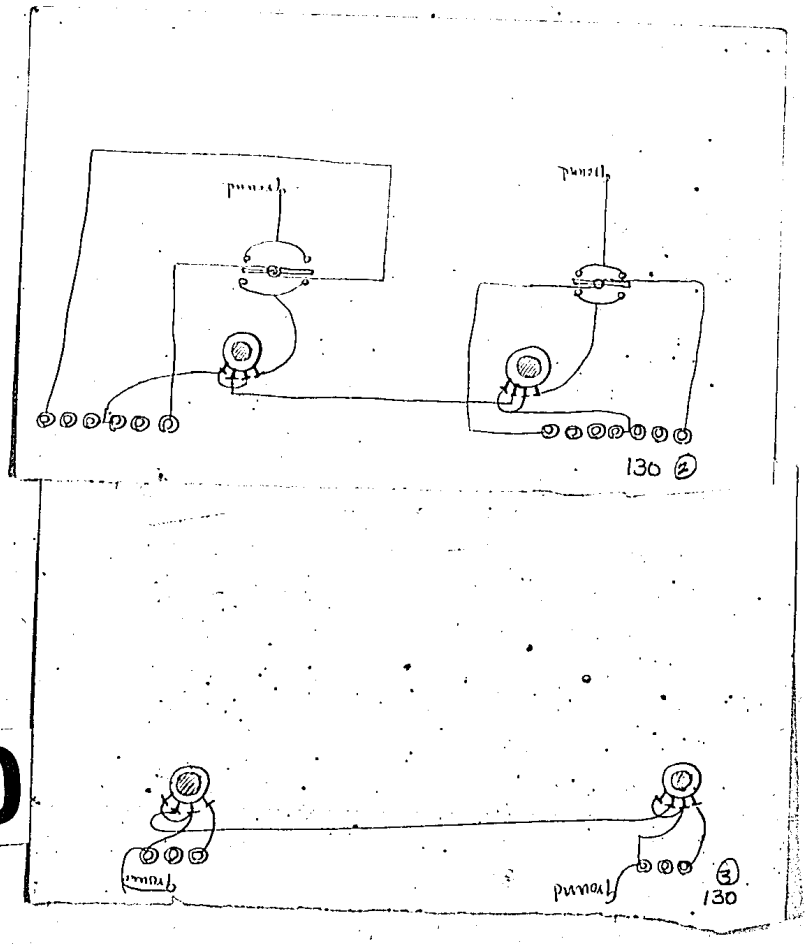

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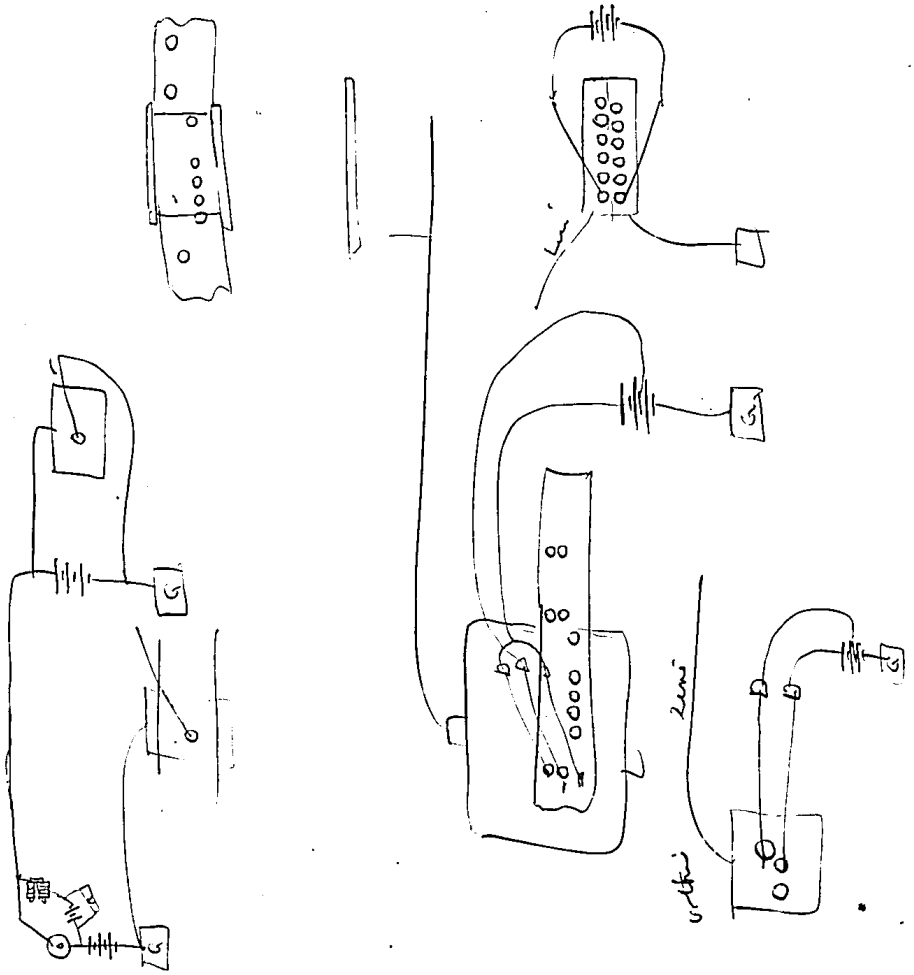

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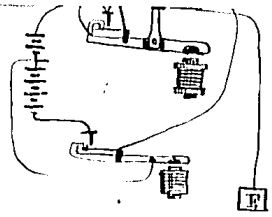
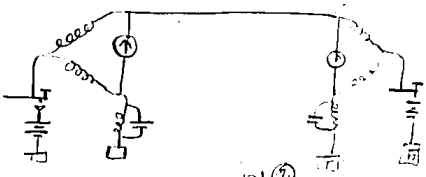


Fig. 6



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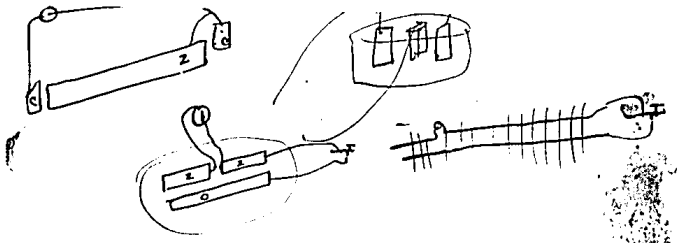

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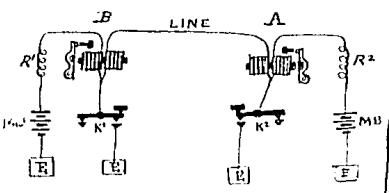
Fig 1



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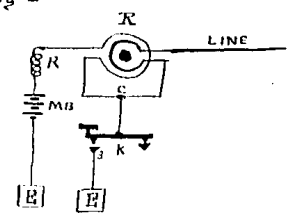

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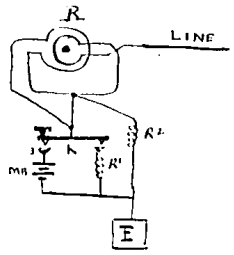

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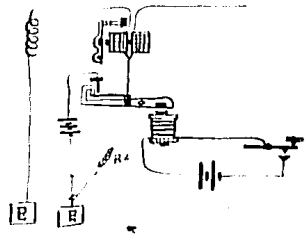


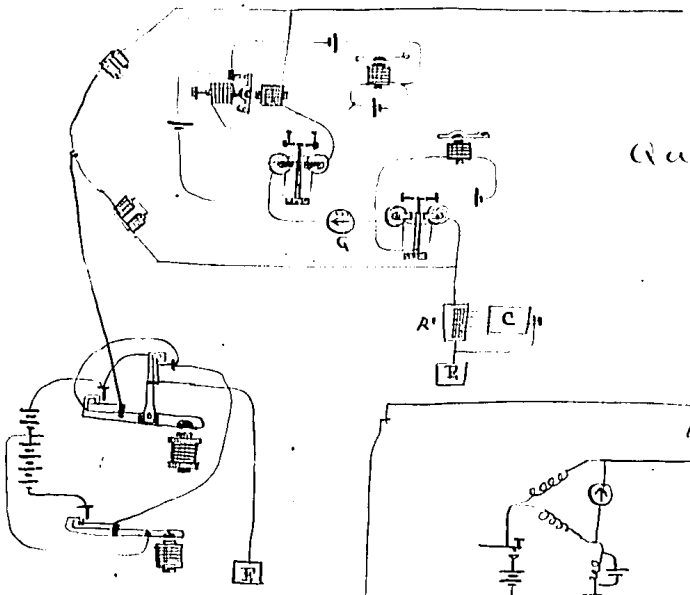
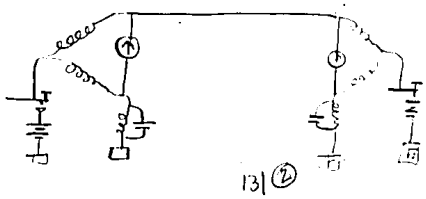


Fig 5

Quadruplex

Fig. 6



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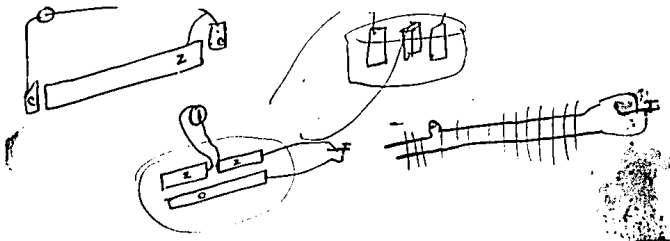

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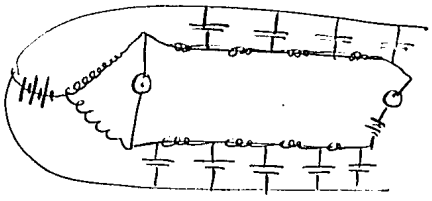

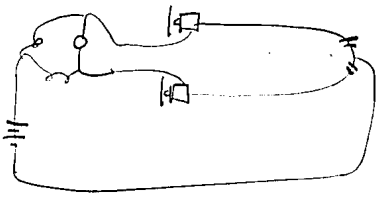

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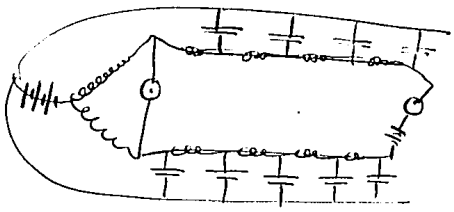

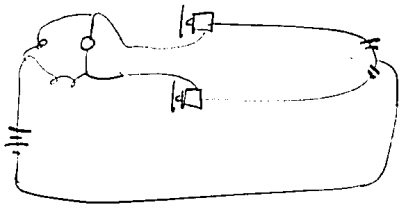

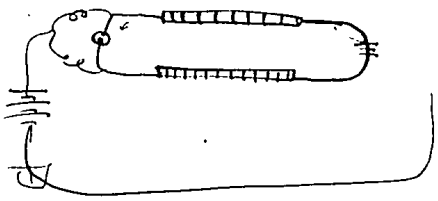

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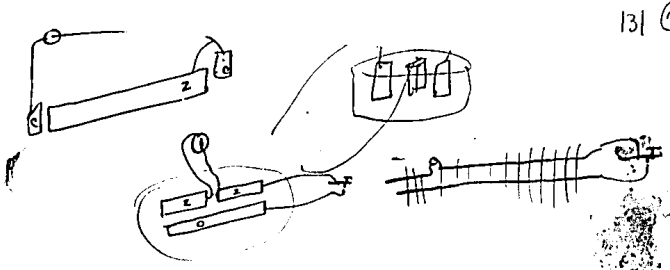

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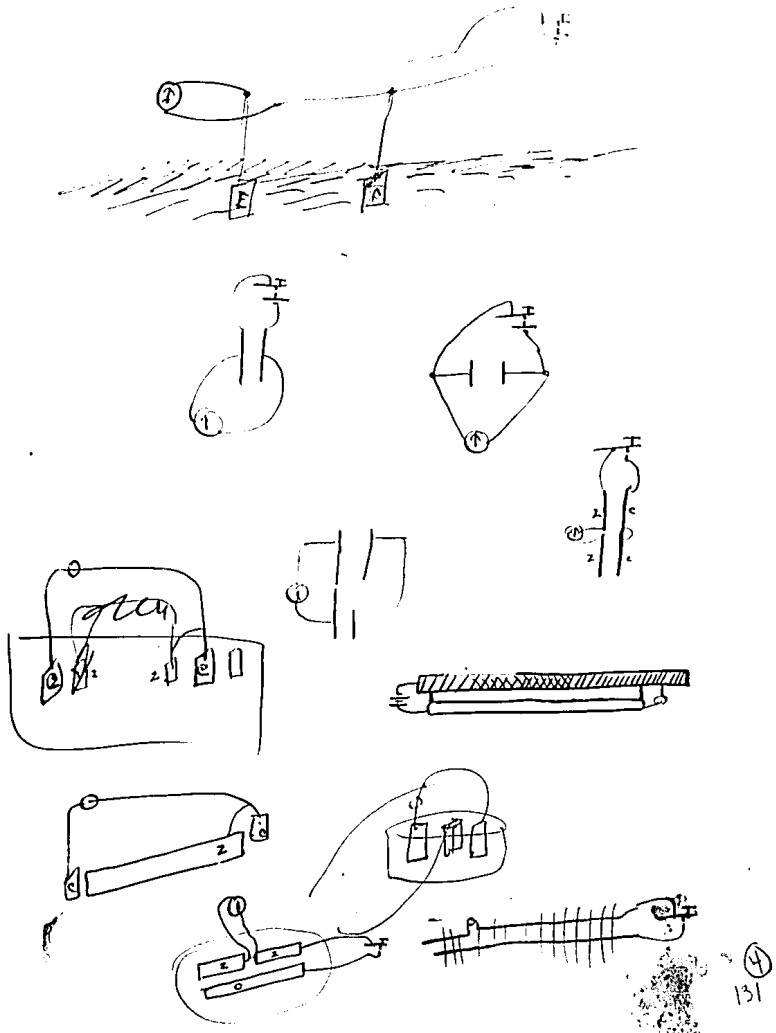

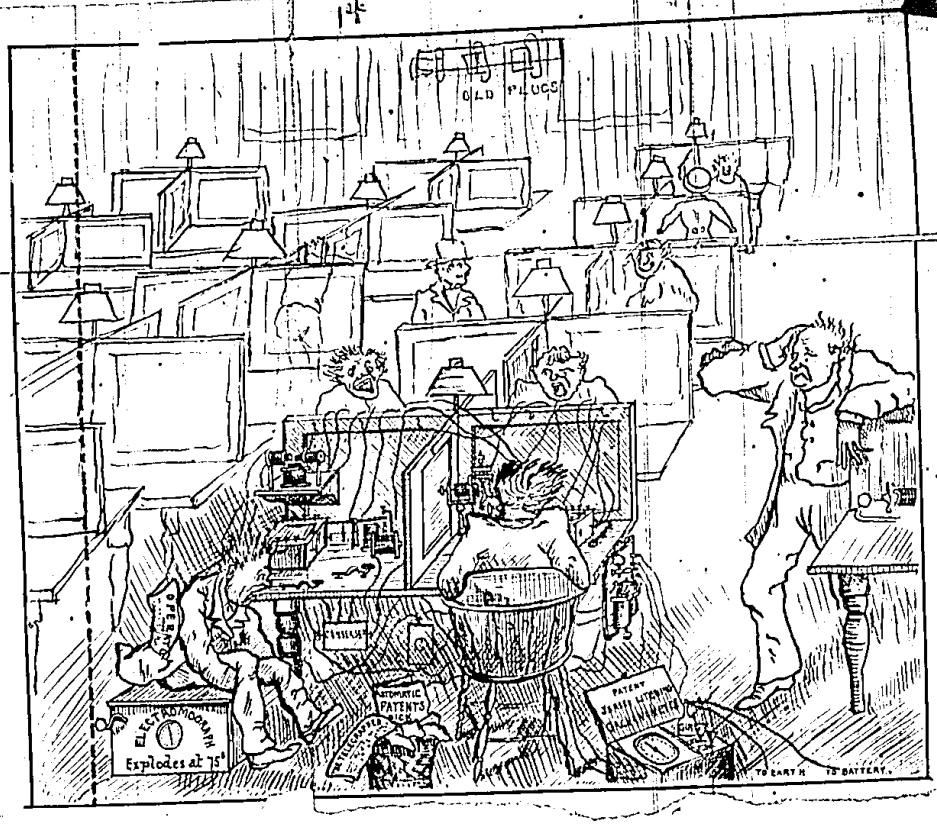

132

Quadruplex — wire crossed — 132 ①

JOURNAL OF THE FRANKLIN INSTITUTE.
Editor's Office.

Philadelphia, Nov. 3d 187[illegible]

My Dear Sir:—

It occurred to me while examining the remarkable little instrument of yours — the motograph — at the Franklin Institute Exhibition this evening, that perhaps you would be willing to go over it & show it to the highest scientific body in this country, the National Academy of Science, of which Professor Henry is President, now in session in this city. Mr. Cartrick was good enough to say he would send you a message from me and write a note. I send this letter to explain matters more fully.

The first notice I saw of your curious discovery was in the London [illegible] I [illegible] it, as a scientific fact of very important bearing in many directions, but I have had it in my mind ever since to write and request you to prepare me an article for the Journal describing it and if possible, illustrating it. This I wished to have now to make, if you really cannot do it, can you not place me in possession of the facts & material so that I can make up a paper on it.

I am very anxious too, that the Franklin Institute should recognize the merit of this discovery and properly reward it. As a member of the Board of Managers I shall be very glad to do what I can toward this end. So that

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[illegible]

[illegible] the Professor of [illegible] in the University of Pennsylvania [illegible] 3411 [illegible]

[illegible]

[illegible]

F. A. Edwards [illegible]

132 (2)

Leffects Patent
Translating Sounder

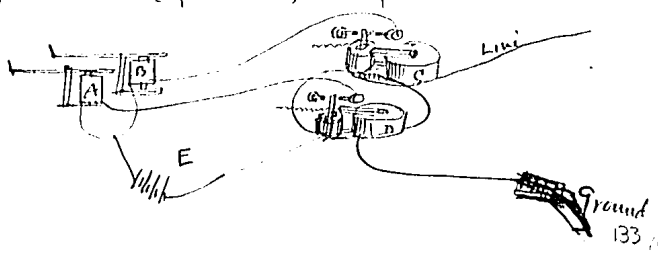
1

This invention consists in the combination of several devices for ~~preparing~~ Rapid recording, and recording in such a manner that the paper can be run through a second machine, and the recorded dots made to translate themselves into Roman characters and be printed upon a slip of paper by this machine,

~~The are three machines~~ The recorder is similar to an ordinary morse register, with the exception that it is provided with an extra embossing point lever, and electro-magnet, These levers are so arranged that when one is brought to the face of the paper for an instant a dot is embossed in the paper on the right and when the other lever is raised in the same manner a dot is embossed on the left

So that a character is formed of dots on the right, left, or right & left,

The electro-magnets which operate these two levers are placed within a local circuit and connected to two very quick acting polarized relays Thus



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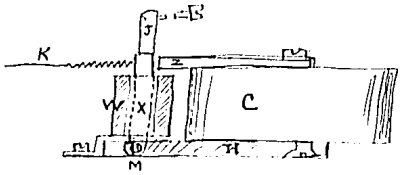
A and B are the electro-magnets which operate the two levers, E is the local battery, C and D are two polarized relays both within the main circuit and are operated by currents of different polarities sent from the main station at the other end of the line one relay responding to a negative current and its armature closing the local circuit of one of the electro-magnets operating the embossing lever, and the other responding to a positive current and closing the other electro-magnet of the other embossing lever, I employ a large and powerful local battery so that the large amount of force will be enabled to make the levers do their work promptly and make them follow the rapid vibrations recorded upon the relays.

These relays may be operated by perforated paper in the usual way or by any special mode,

The relay magnet is of peculiar construction



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W is a small helix in which is kept a constant current, this polarizes the iron tube X, pivoted at M upon the iron arm proceeding

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from one end of the magnet C. This vibrating tube lever is drawn back from the pole Z of the magnet C by the spring K – The coil of magnet C being connected within the main line and the local constant battery to the polarizing coil W it follows that if a negative current (as the case may be) is sent through C, it will attract the tube X and close the circuit as before described, but if a positive current is sent the magnetism in arm Z & H will be the same as in the tube and the effect will be neutralized, and the tube X does not move, The use of the spring is to pull the tube back after a current has been sent and the tube attracted, I also employ only one spool instead of two so as to get the magnet as short as possible, so that it will charge and discharge with rapidity. I make the armature of a tube for the reason that it will be much lighter and act much quicker and still have the required strength – I do not wish to confine myself to ~~any particular form of~~ one single spool as an ordinary magnet may ~~be~~ replace the spool C.

I claim. 1st A polarized relay constructed substantially as described

2 Combination of a double penned embossing register with two polarized relays.

3 Operating the Relays and Register in the manner set forth.

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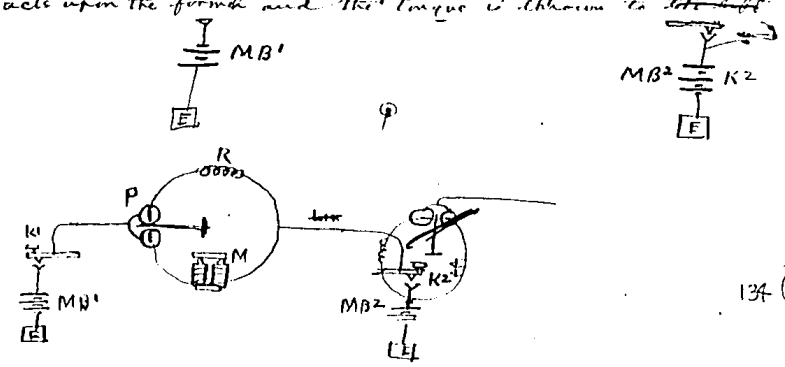
P is an ordinary polarized Relay, the main line wire being attached to the wire connecting the two spools together. M is an electromagnet having a resistance equal to that of the polarized relay of P. R is a constant resistance ~~which is so adjusted that when the current is permanently closed~~ also equal to the polarized relay.

When ~~the current of the line is permanent~~ both the keys K' K² are closed the ~~main~~ current from the main batteries pass over the line but produce no effect upon the polarized relay for the reason that it is balanced in the two coils of the polarized relay, but the magnet M, is not so balanced. If now the current of the line be interrupted by opening either key the ~~magnet M~~ induction current from the magnet M circulating when the closed circuit of low resistance formed by the polarized relay P Resistance R. ~~the~~ passes through the polarized ~~lower~~ one side. If the ~~key~~ first circuit is now closed 134 (1)

relay. R is a resistance also equal to the relay.

When both the keys K' and K² are closed the current ~~from the main batteries pass over the line but produce no effect upon the relay when the current~~ is permanent the tongue of the relay will remain on either side, as the main current in passing through the two coils in opposite direction balance each other produce no magnetic effect. But the magnet M is not so balanced, hence when the ~~either key~~ 134 (2) current is interrupted by either key the secondary current from it circulates within the closed circuit formed by the relay P and resistance R acts upon the former and the tongue is thrown to ~~the left~~



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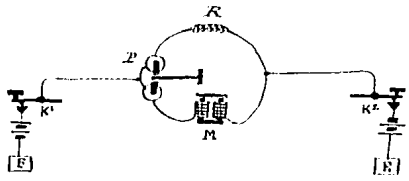
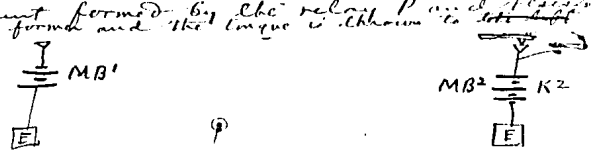
On a new method of working polarized relays
BY T A Edison

By means of the arrangement shown in the accompanying diagram any number of polarized relays may be worked on closed or permanent circuits.



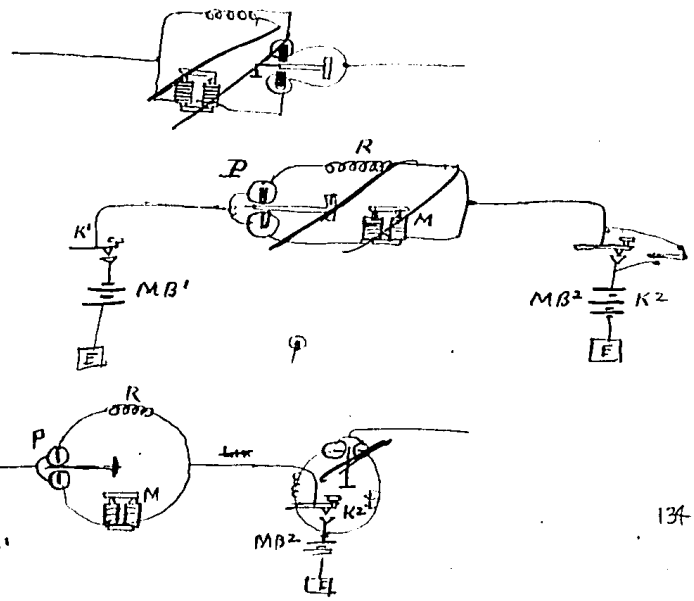
P is an ordinary Siemens polarized relay. The main line wire is attached to the wire connecting the two spools together. M is an electromagnet having a resistance equal to that of the polarized relay. R is a resistance also equal to the relay.

When both the keys K' and K² are closed ~~the current from the main batteries pass over the line but produce no effect upon the relay which the current~~ is permanent the tongue of the relay will remain on either side, as the main current in passing through the two coils in opposite direction balances each other produce no magnetic effect. But the magnet M is not so balanced hence when the ~~other key~~ current is interrupted by either key the secondary current from it circulates within the closed circuit formed by the relay P and resistance R acts upon the former and the tongue is thrown to ~~left hand~~



On a new plan of working polarized relays. By T. A. Edison;

By means of this arrangement ~~the~~ a ~~advantages of~~ number of polarized relays may be worked on closed circuits; (1st) with permanent currents,



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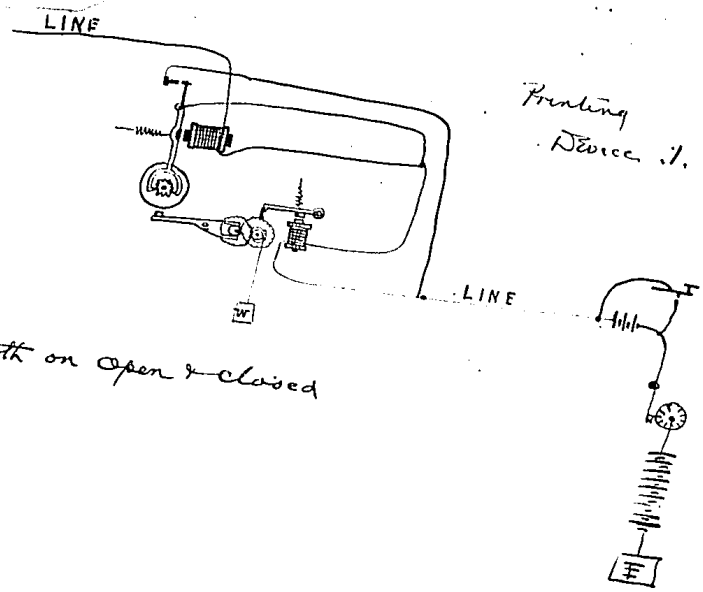
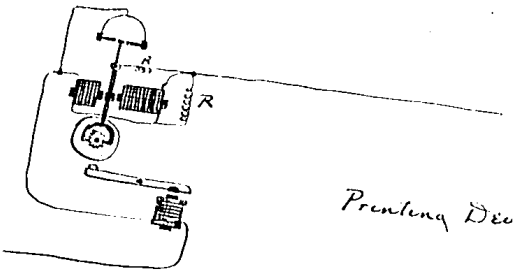


Printing Device .1.

Prints both on open & closed



Printing Device .2.

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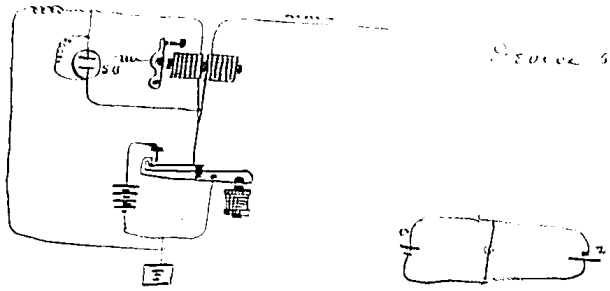

Device 3

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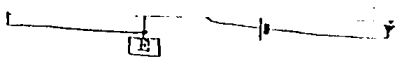

DUPLEX-G.C.C.

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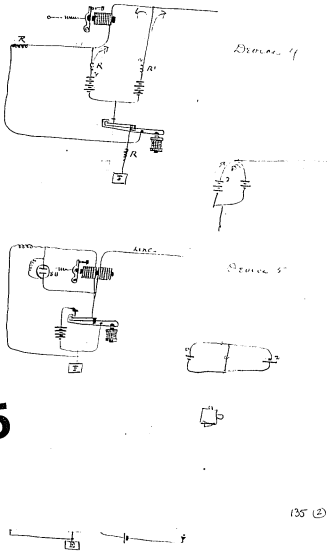

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DUPLEX-OFF.

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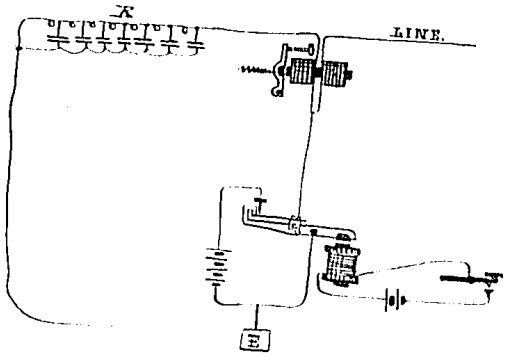

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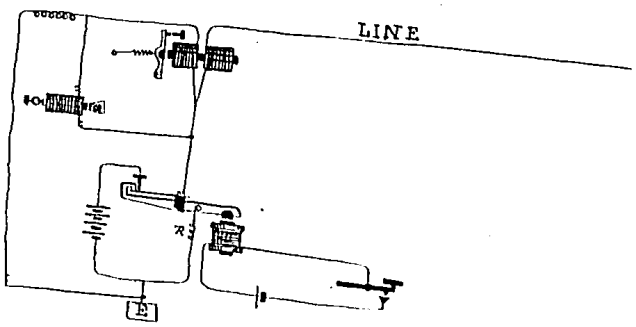

DUPLEX-Q.U.O.

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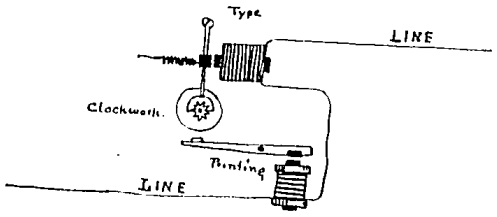
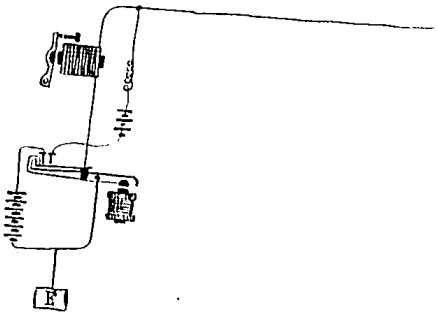
1864. Richard A Brooman. Specification N° 1720.

Principle



Rotates type wheel by a weak current, prints by increasing it.

136 (3)



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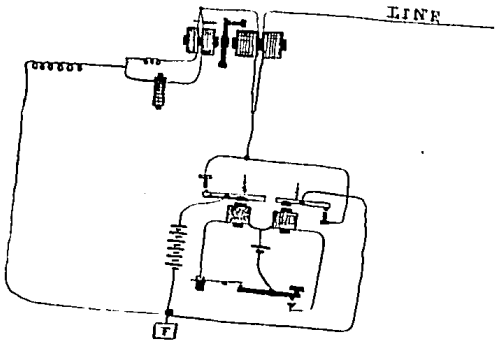


Figure 14

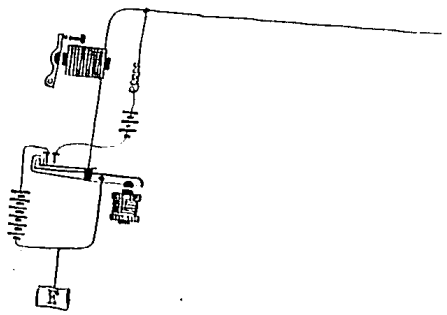
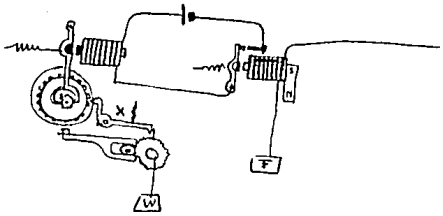


Figure 15

137

1857. Barnes, Specification No 1183.

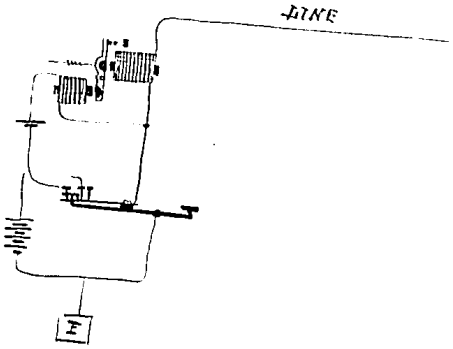
Principle



Prints & rotates Type W. by clockwork - printing prevented when type wheel is rotated by a click being placed in the path of a toothed wheel on the type wheel shaft, on ceasing to rotate the click drops in between the teeth an releases the clockwork which operates the printing lever,

137 1

137



137 2

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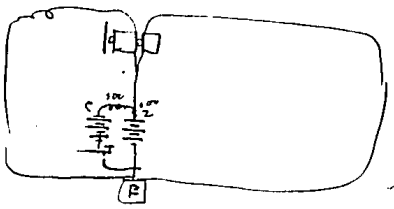

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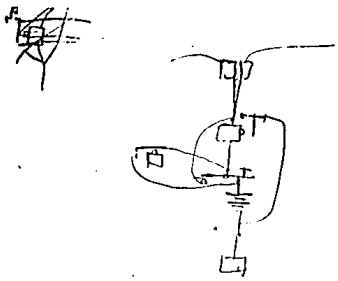

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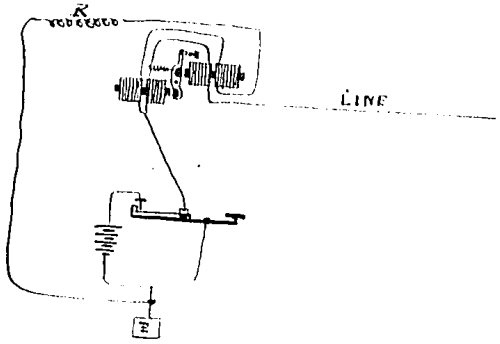

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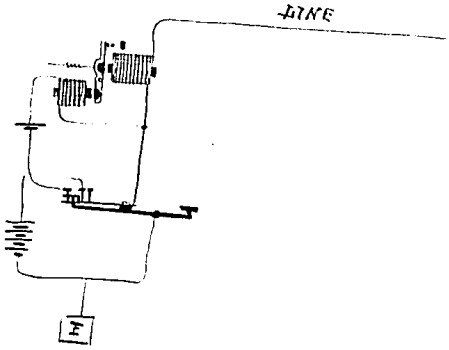
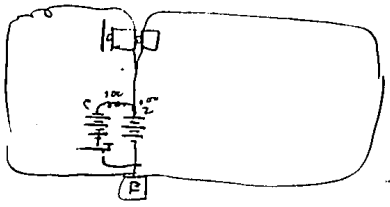


137 2

Page 1



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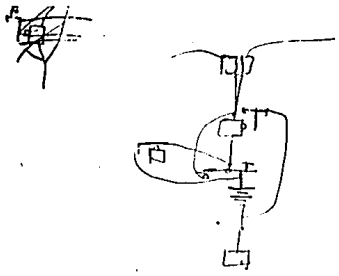

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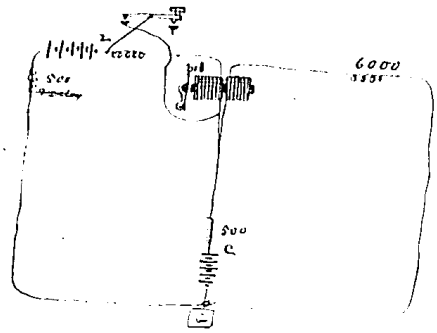

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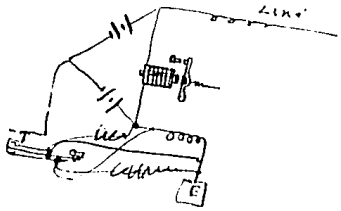

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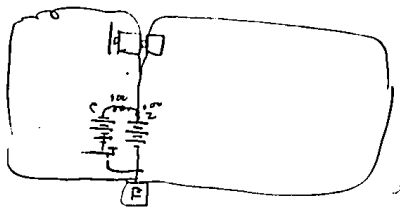

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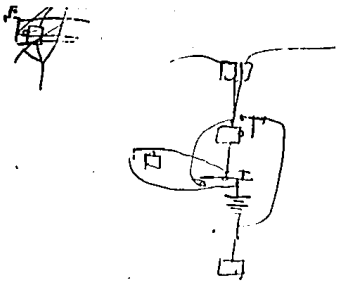
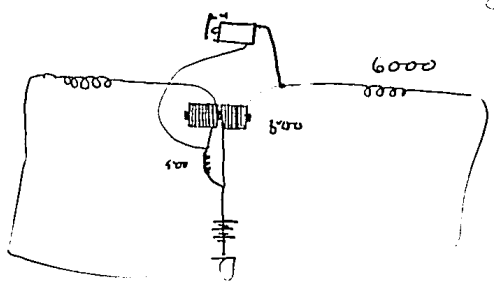


137 (4)

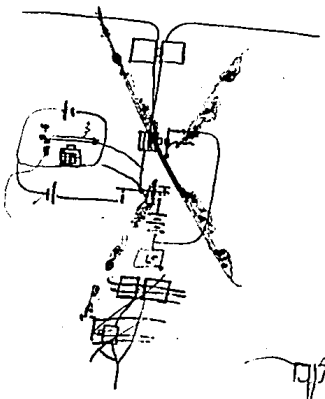
137

Page 2



Dwg Fig 4

137



137-1

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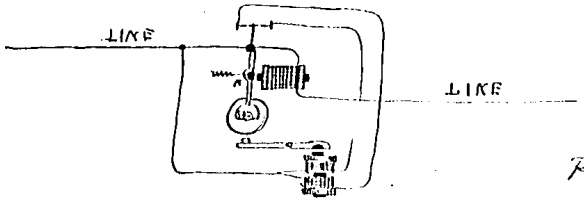
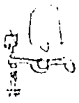
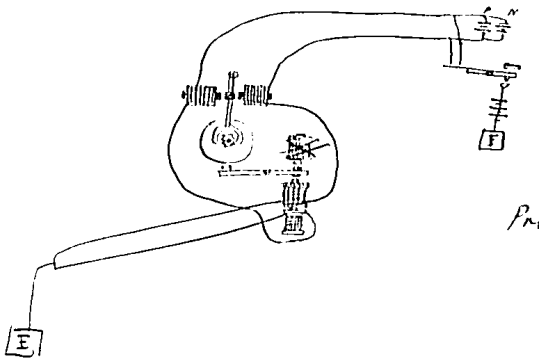


Printing Device 3.

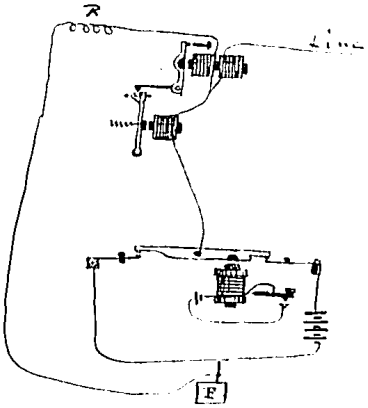
Armature polarized - only responds to + Current.





Printing 4.

138 (1)



Device 13

138 (2)

138

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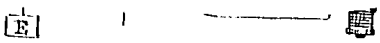
Same here

138 (3)



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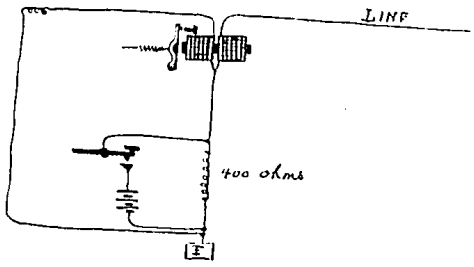

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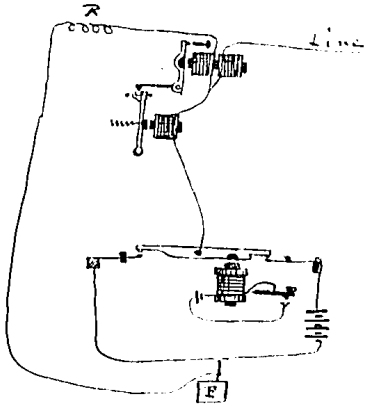

Device 13

138 (2)

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same here

138 (3)

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138 (4)

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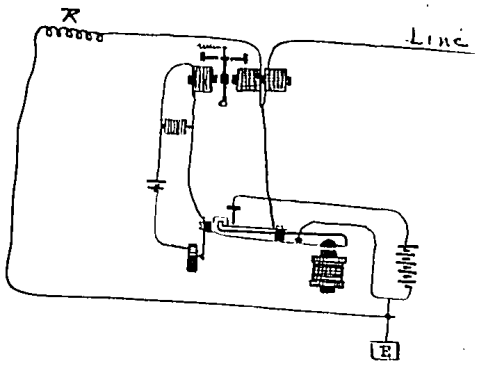

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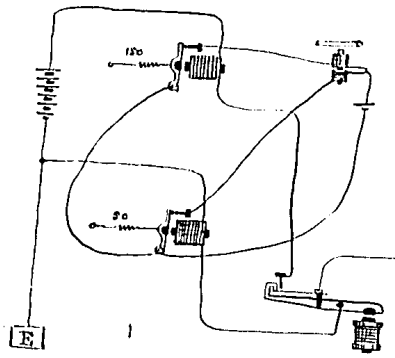
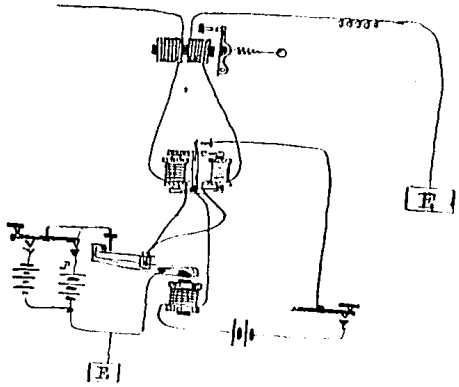
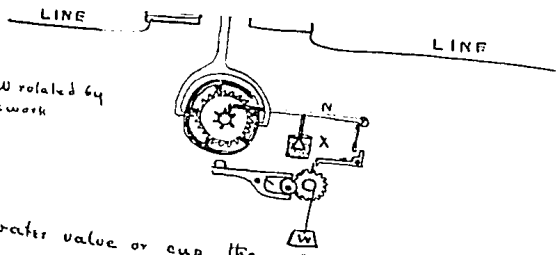


not tried yet

Device 11

Same



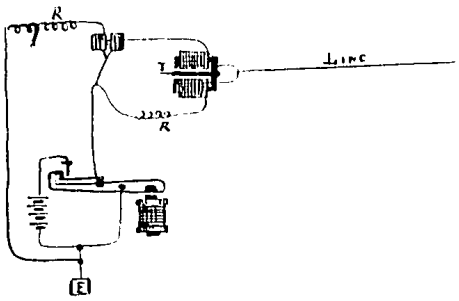


Type W rotated by Clockwork

X is a water value or cup. the rotation of the type keeps the lever N + float on top of water. and the printing clockwook is locked. when the type is stopped the Lever N is free to go between the teeth of a wheel on the same shaft as the type wheel, it does not do it instantly as the float takes some time to sink when it do reach the bottom it releases the printing mechanism

139 (2)

139



Source 4

139 (3)

139 (4)

Turned by clockwork —

(5)
139

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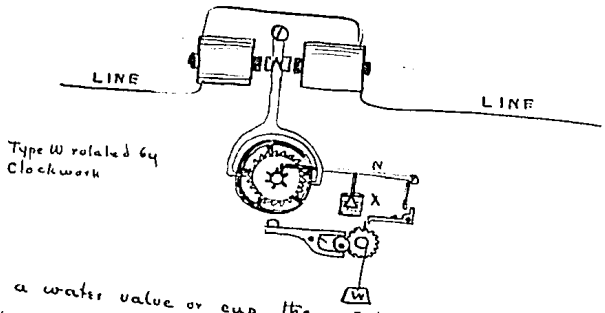
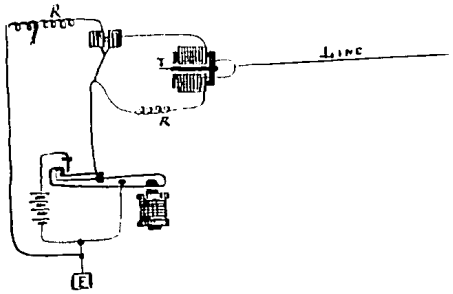
1845 Brett. Specification No 10.939.



X is a water value or cup. the rotation of the type keeps the lever N on float on top of water. and the printing clockwork is locked. when the type is stopped the Lever N is free to go between the teeth of a wheel on the same shaft as the type wheel, it does not do it instantly as the float takes some time to sink when it do reach the bottom it releases the printing mechanism

139 (2)

139



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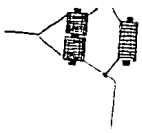

139 (4)

T worked by clockwork —

(5)
139

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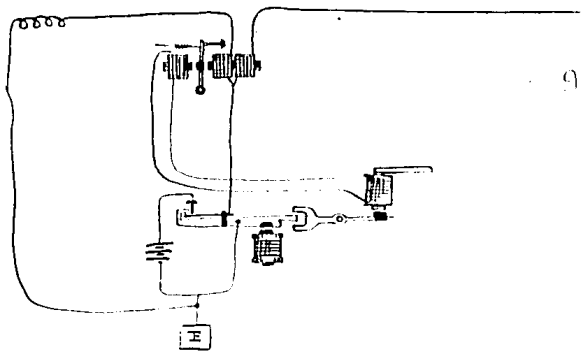
Sa



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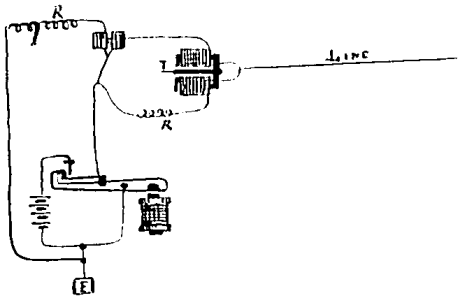

Source 4

139 (3)

139 (4)

worked by clockwork —

(5)
139

139

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THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

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139 (4)

worked by clockwork —

(5)
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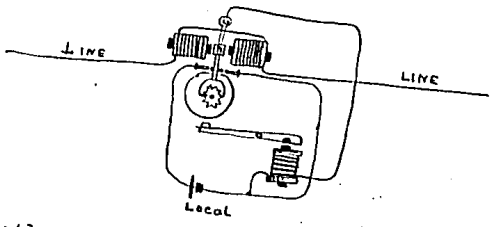
1865. Clark. [Boyles English] Specification No 2356.

Principle



Type wheel & printing worked by clockwork —

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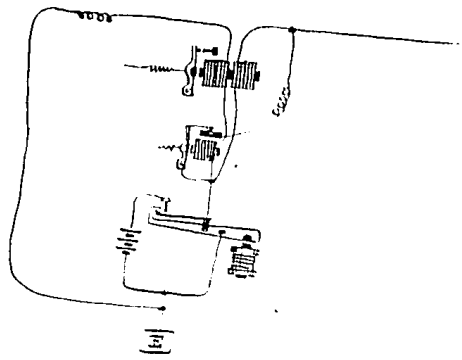
Device 2



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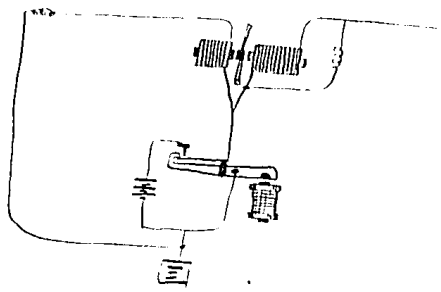

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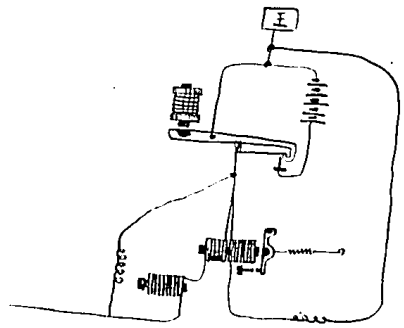

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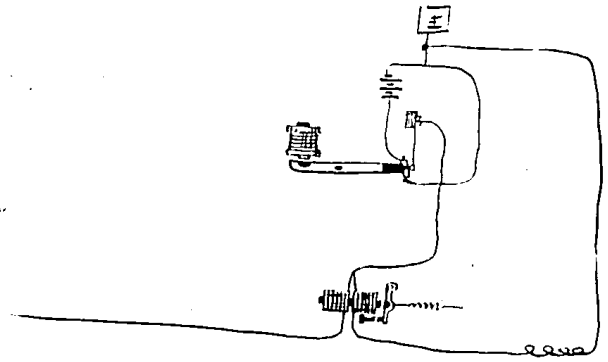

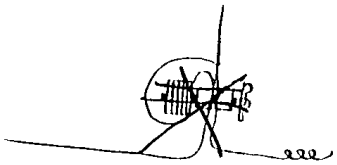

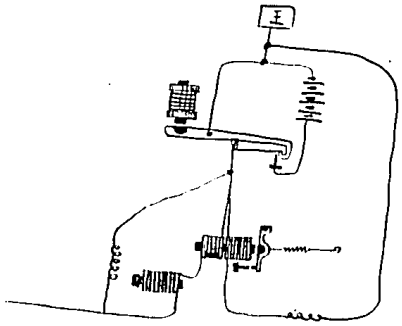

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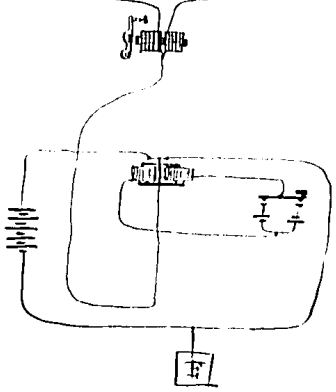
Fig. 11



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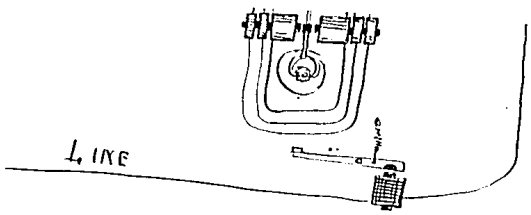

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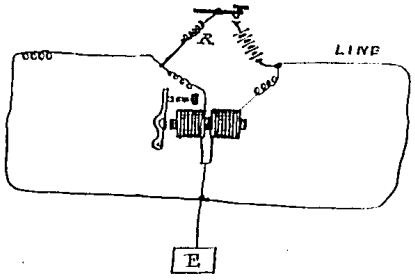

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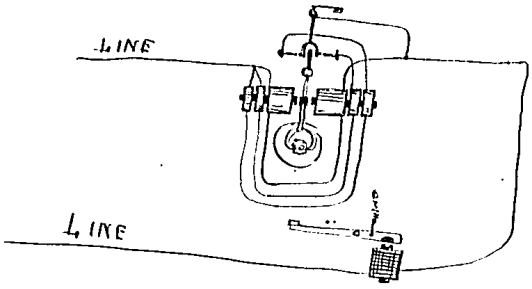
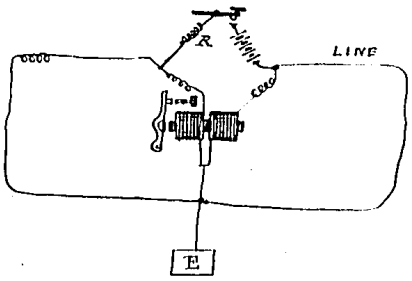
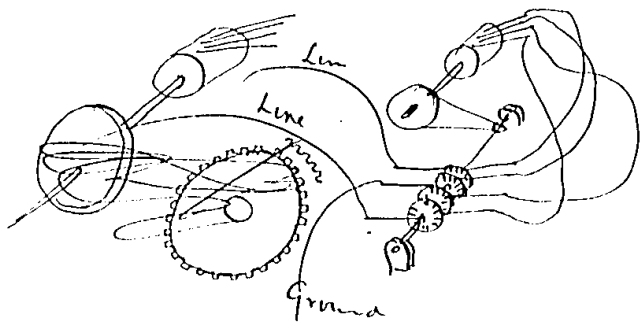


140 (5)



140 (D)

Caveat =



I use Roman perforations with letters formed with four lines, and two line wires At the sending Station the roller pens two on one line and two on another Send P & N Currents over Each wire as was described in former Caveat. at receiving station ~~the~~ is same arrangement of pens one pen of one wire being set ahead one hole ~~for~~ of other ~~the~~ pen of same wire, owing to the Conductivity of the

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of the chemical paper I get a crossfire of current from one set of pens to other as already described in former Concept. This Concept is to show a plan for obviating the cross fire.

In receiving besides the rotations of the drum carrying the paper there is a second apparatus drawing from contact wheels & connecting openings which revolve several times faster than the drum carrying the paper. These contact points are so connected to the receiving pens that in rotating the line connection of each set of pens is independently broken & closed with immense rapidity relative to the line vibration ~~The Concept~~ one line being disconnected from its set of pens while the other line is in connection with its set and vice versa.

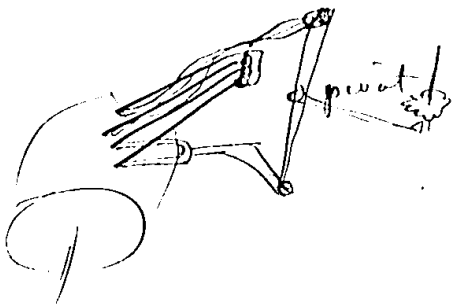
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

so that at no time are more than one set of pens recording. the other pens having no connection at that instant with any source of electricity ~~cont~~ hence no cross fire is possible. When the contact is broken 5 times as fast as the main circuit the ~~writing~~ letter recorded are nearly perfect. I do not ~~wish~~ wish to confine myself to this mode of obtaining one set of pens operation while the other set is vice versa as a ~~any~~ mechanical means may be employed to vibrate the pens one and off the paper the $\frac{1}{500}$ of an inch such as using a very fine toothed wheel for each pen ~~and~~ ~~are~~ arranged in such a position under the pens that when one set was raised by a tooth on one wheel the other set

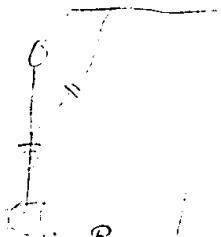
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

of pens would be in the space between two teeth on another wheel & be in contact with the chemical paper. This wheel being rotated very rapidly would alternately raise and lower the pens,

It also can be done by a comb of insulating material or any metal which does not form a oxide which is made visible by the ingredients in the chemical paper the ~~com~~ form ~~from~~ 4 prongs of the comb being vibrated by mechanism like



THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1



I claim: Roman Letters formed ~~of o~~ by perforations on continuous strips of paper

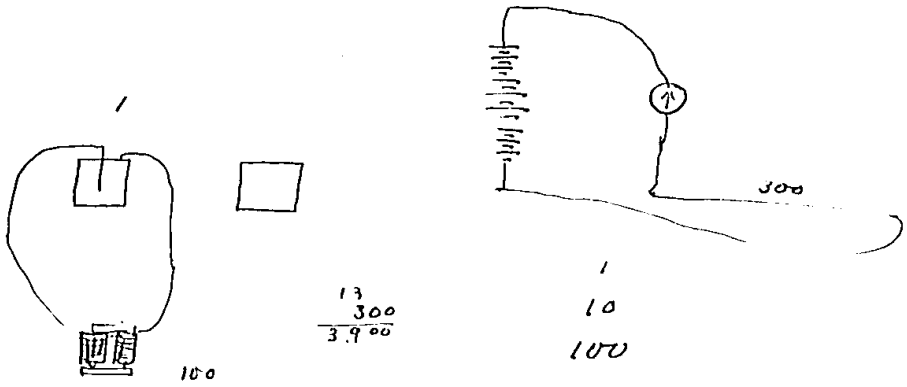
I claim ~~the use of~~ Combination a number of punches and dies, arranged to perforate Roman letters formed of groups of holes in paper or other material for Telegraphic purposes

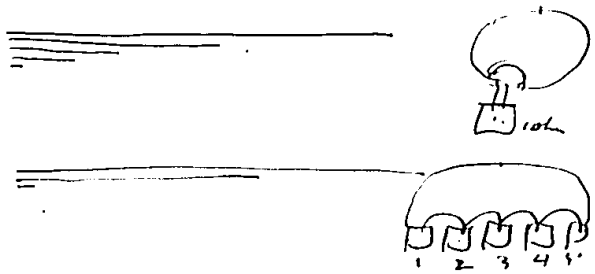
a

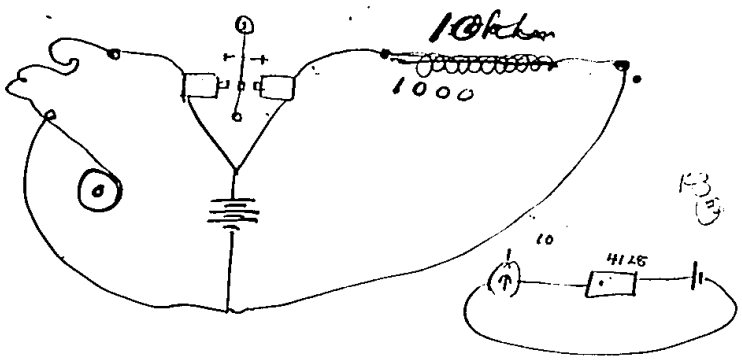
Caveat

H3
(2)

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1



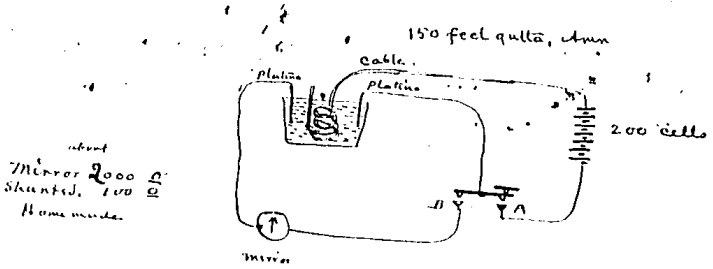




THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

due to the effect of the gradual increase of the secondary E.M.F. Experiment

144



If I press the key down on A I charge the cable, if I open and allow the lever to touch B. the light is thrown off the scale, part of the platina plates are well washed & give no current themselves it soon returns to zero with the lever on B, by shunting mirror down I find, after to see electrification 5° deg. throw, 20.5° I deg 1 minute & 10 I deg. everything insulated = battery-lab = mirror = wire on Vulcanite pillars 3 inches high, Dont it possible to get the insulation of insulation more accurately by ~~calculating~~ reading the secondary battery voltage, 5° to derived from the two platina plates to the common lead current entering in given periods of electrification, please explain where & how I have blundered as I feel I have, because what I know about inble phenomenon Could be put on a very small book.

ps I, please correct grammatical errors & hand to L. Clarke

Cable – I am not like Micawber —

Roman O.K. on two wires, 200 per minute from Liverpool to L.

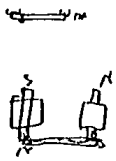
Staff – My proposition holds good stated in former letter, that by a very simple change in the method of using their Clerks I can get twice as much work out of them, without any fatigue to the clerks,

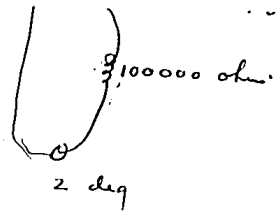
144

Edison

144 ①

144 ③





144 ④

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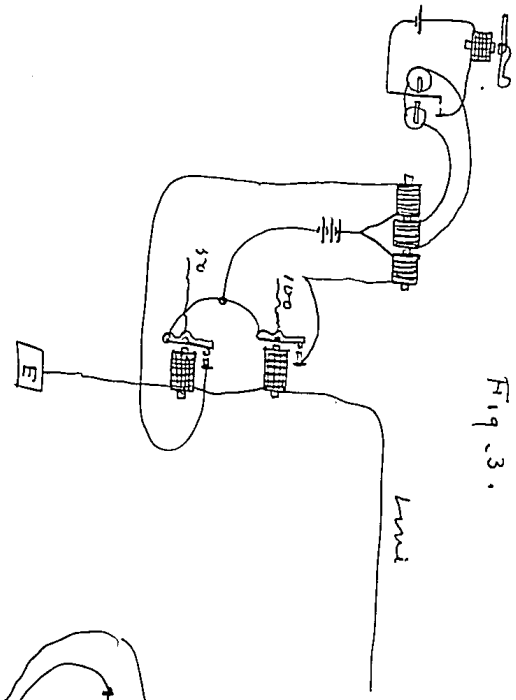

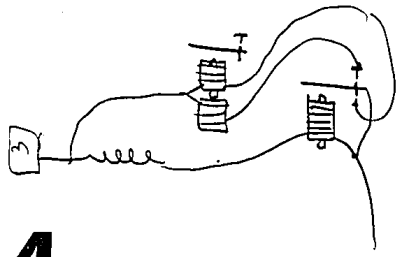

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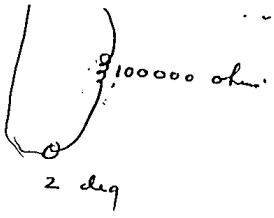
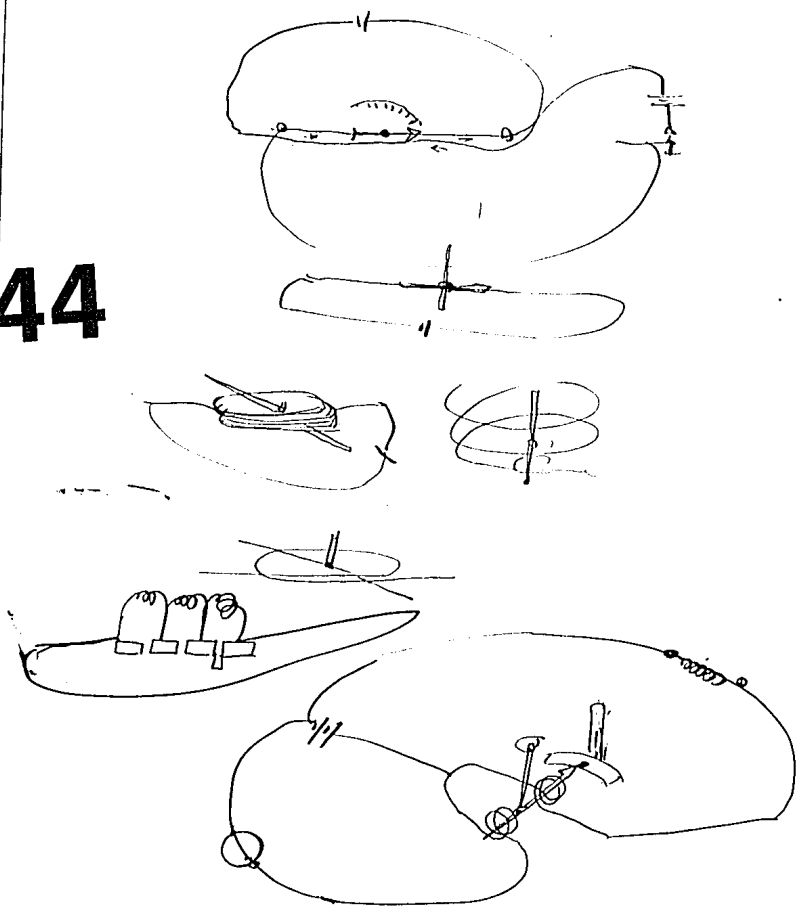
144 (3)

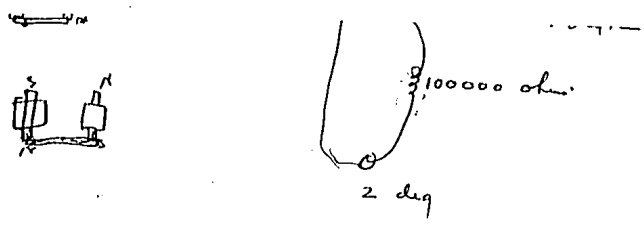


144 (4)

144



144 ③



144 ④

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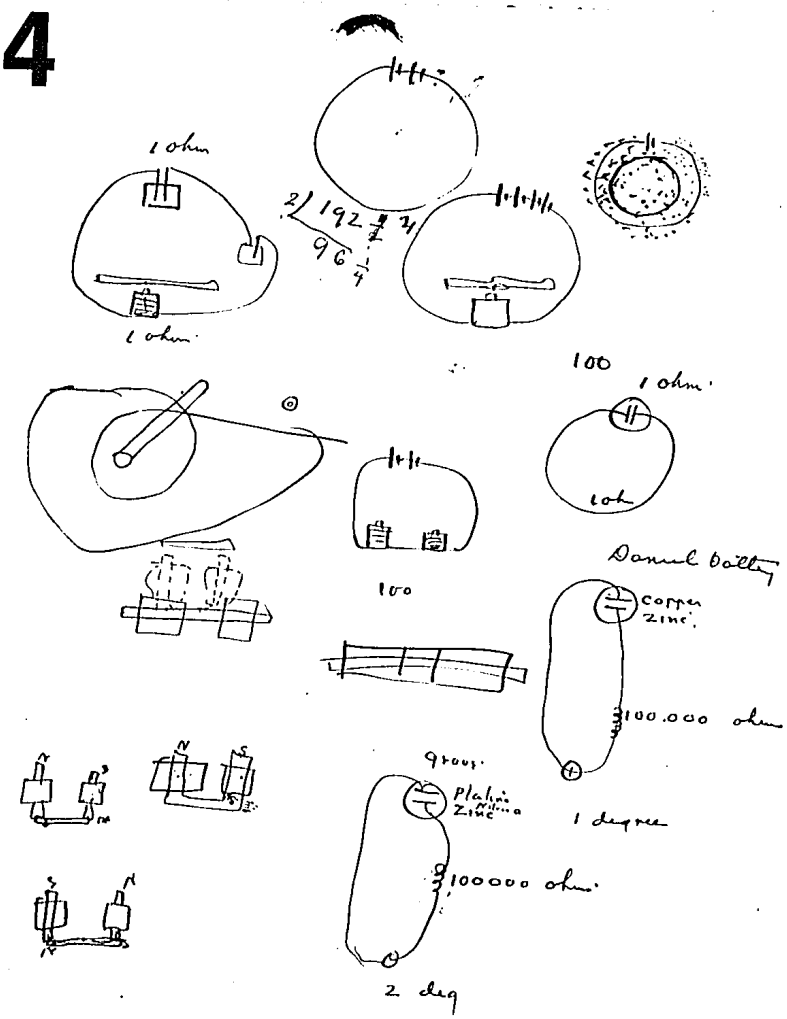
144



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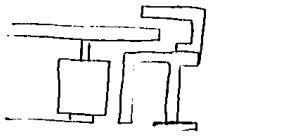
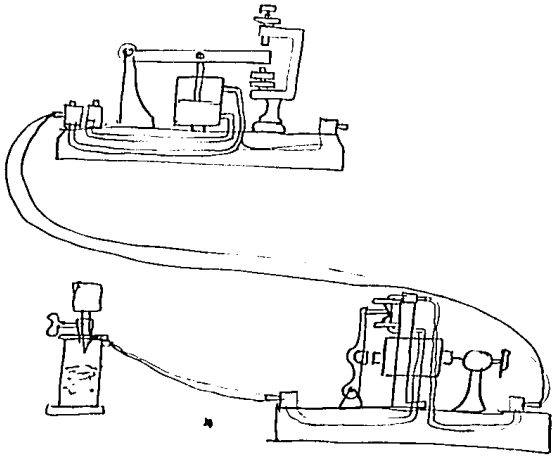
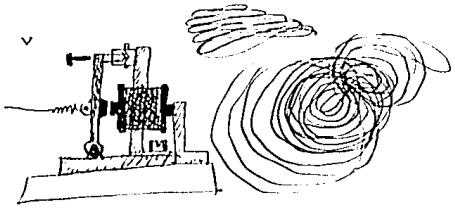


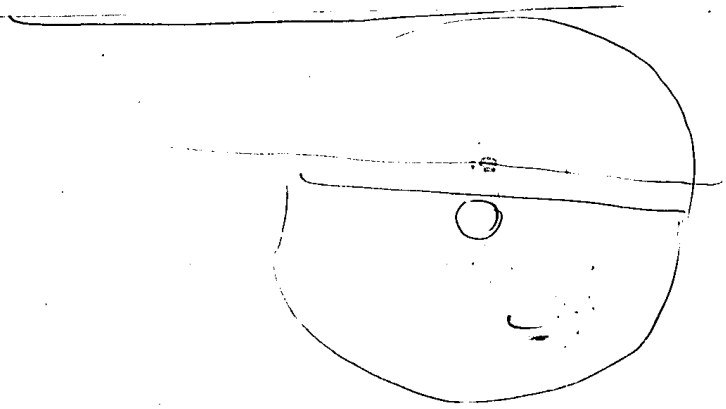


145

145 ①



145 ②

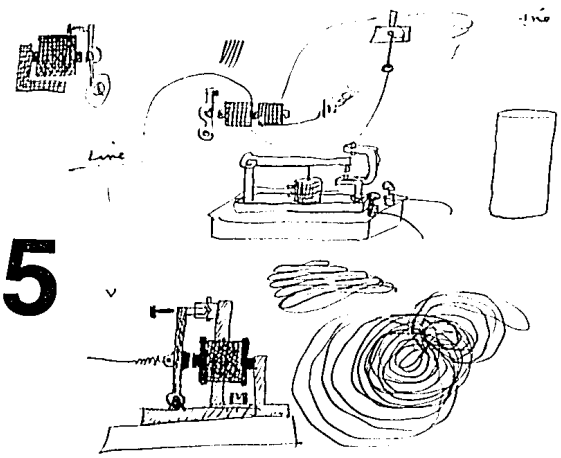


145 ③

THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

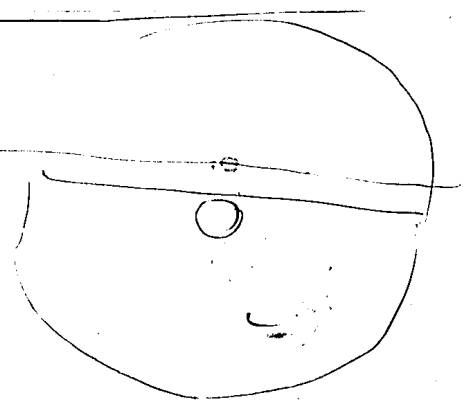
The object of this invention is to transmit over a single circuit at high speed by the use of a series of accumulators or condensers arranged in ~~Duplex manner~~ with ordinary morse apparatus.

The invention consists ~~of the combination~~ in the peculiar arrangement of a number of accumulators or condensers



145

145 ②



145 ③

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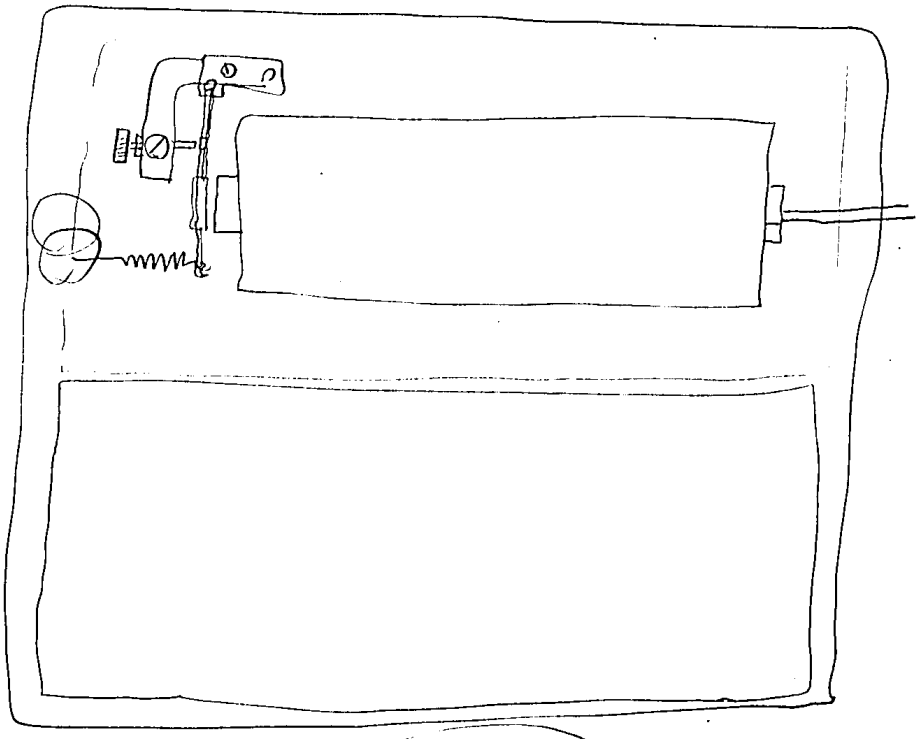
THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1



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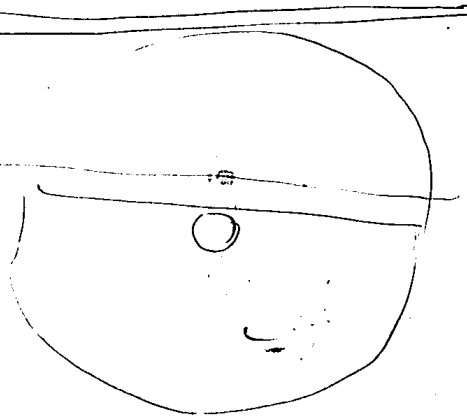


1

Mr Parish.

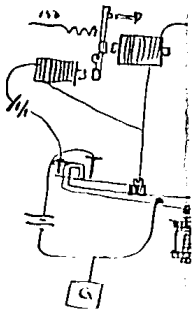
Please make this suggestion to Mr Latimer Clark. all of which of he desires may add to my note to the Society of Telegraph Engineers,

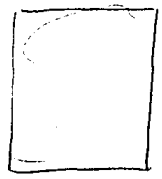
to prevent the diffusion of Liquids in a gravity, or a Minotti Battery.

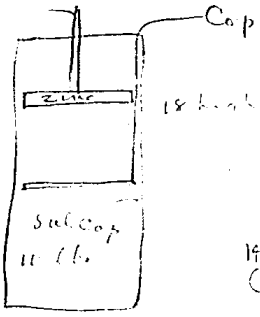
always place the Sulphate of Copper under the Copper plate instead as heretofore benefit it.

grove & Bechemann may be worked in this manner.

The Sulphate of Copper will never rise above the Copper plate

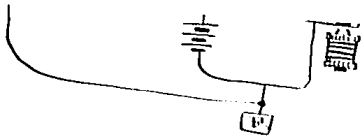


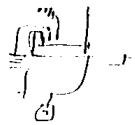




146 (1)

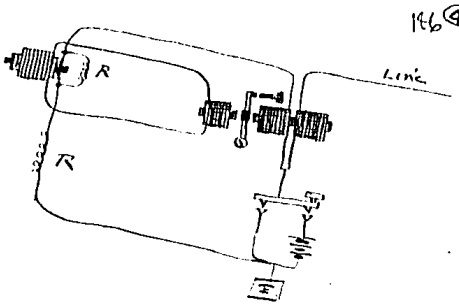
Patented by me 1871.





146 (3)

146 (4)



146

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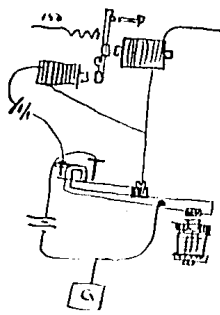

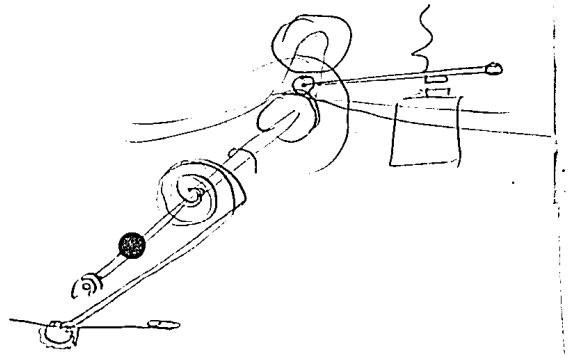

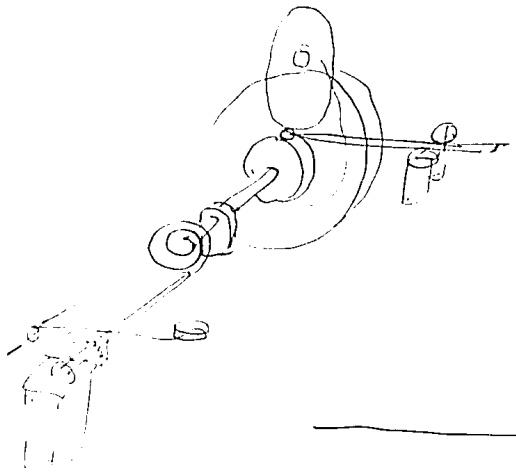

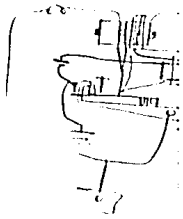

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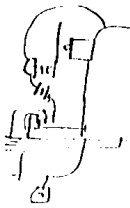
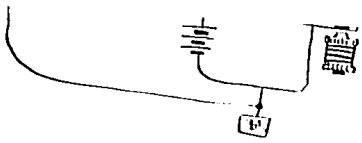


good

146 (3)



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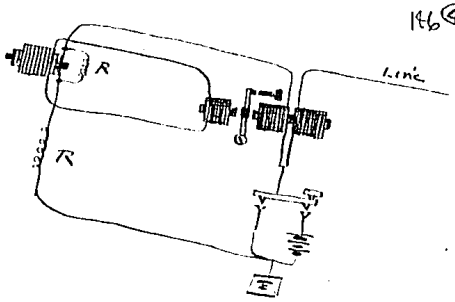

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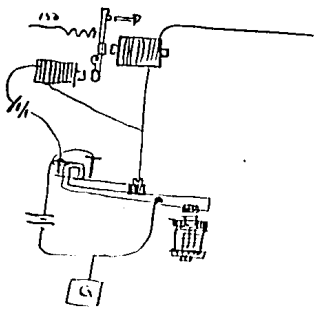
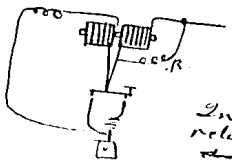
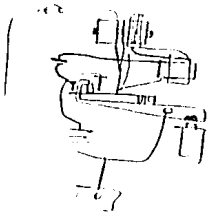


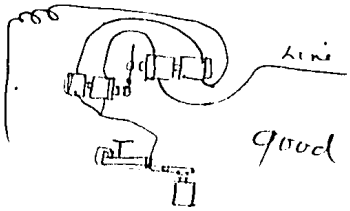


not much good

Induction from relay
related or neutralizing state
~~not change~~

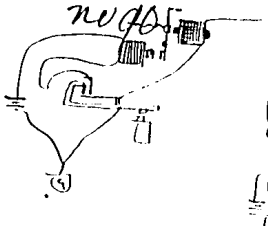


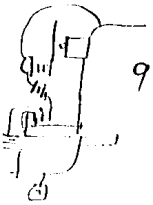
no go



good

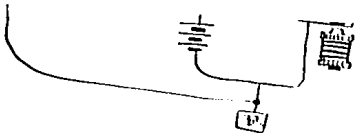
no go



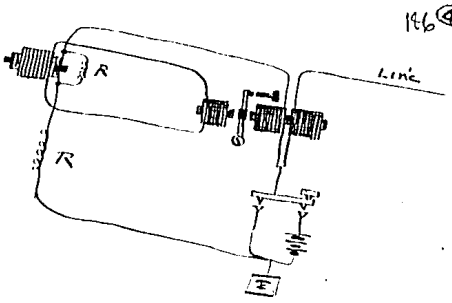


good

146
3



146 4



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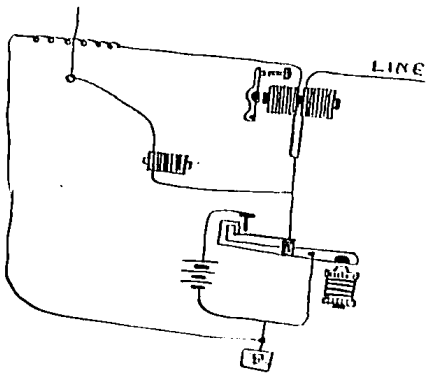
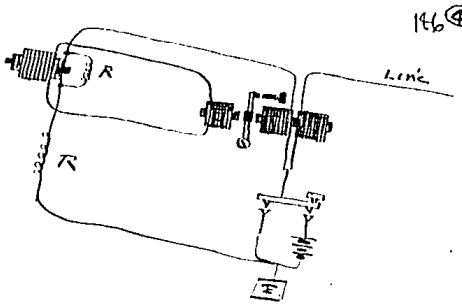
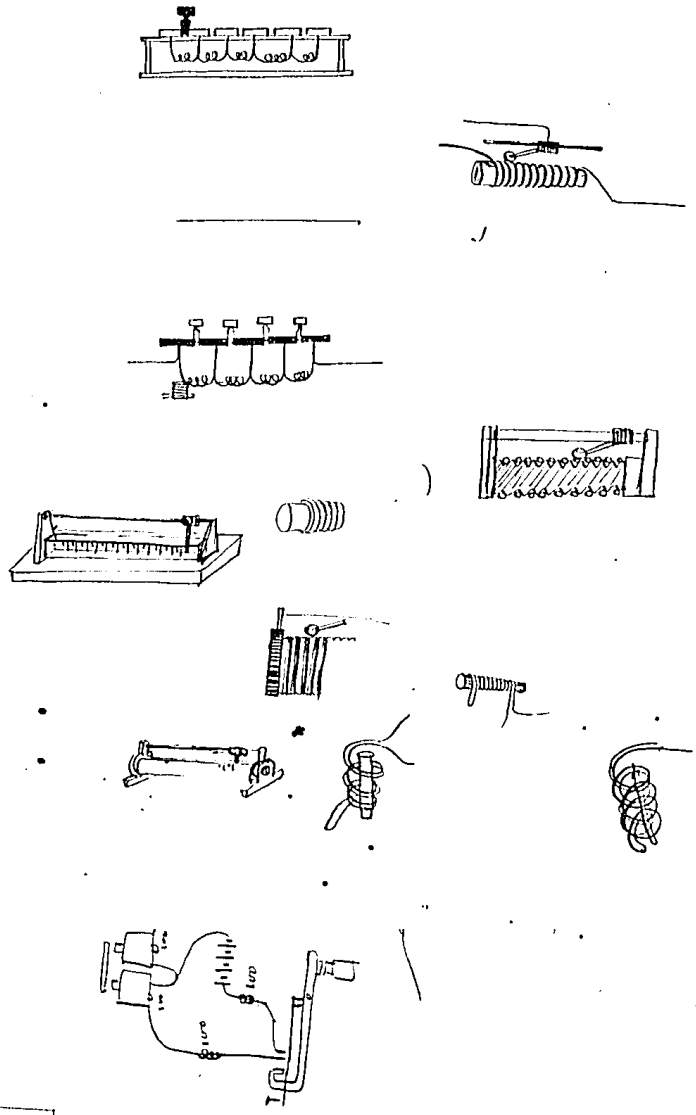


146④



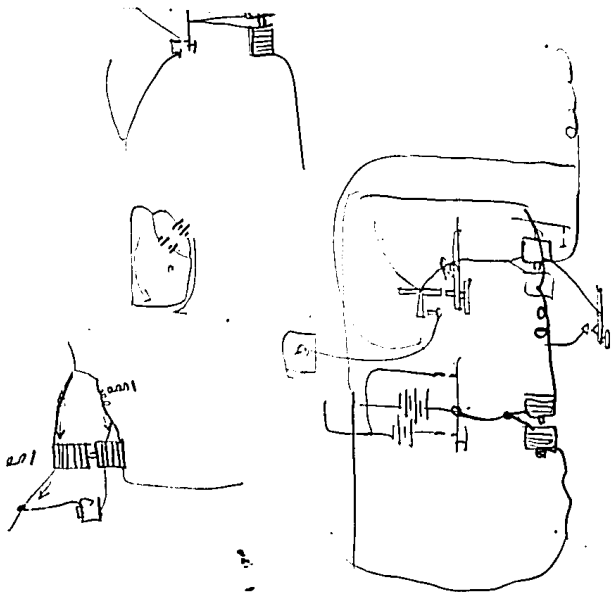
146

147



147 (1)

147 (2)



147 (3)

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THE REDUCTION RATIO FOR THIS DOCUMENT IS 18:1

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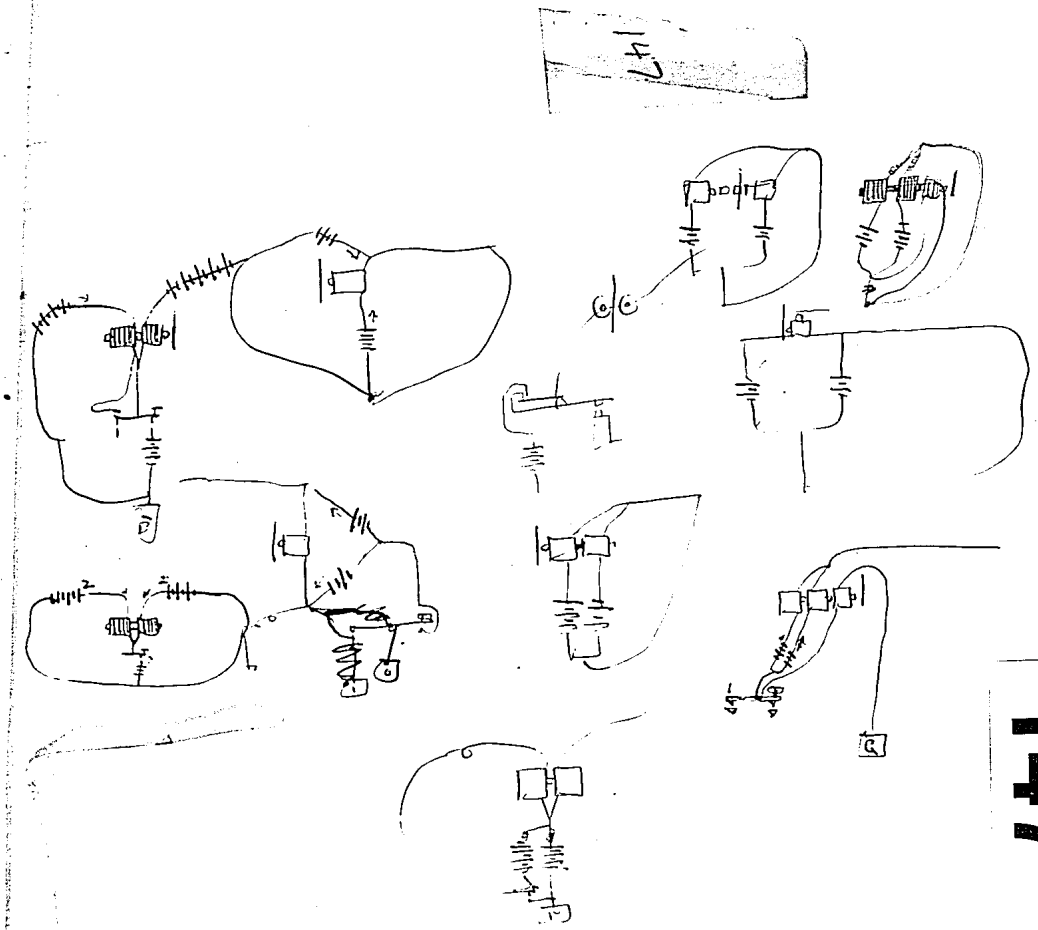
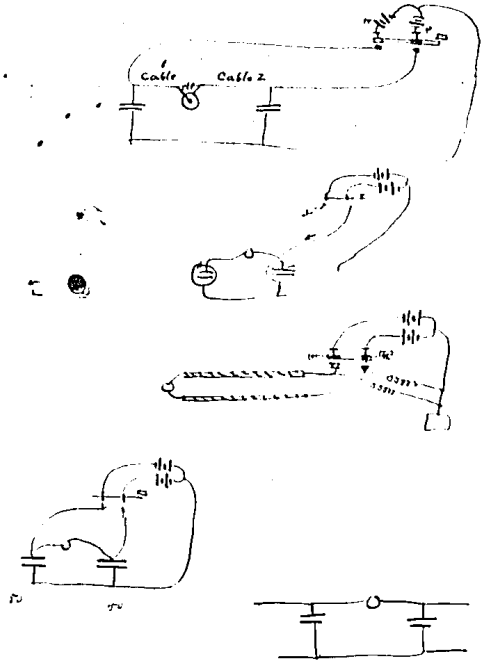


Atlantic Cable

Two Cable Experiment



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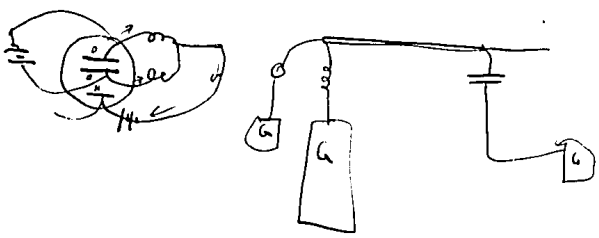

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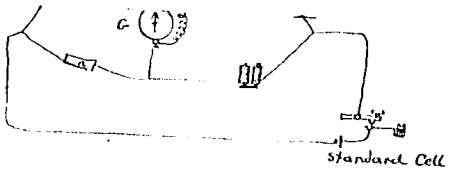

148
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a mirror Galvanometer the current being connected permanently
EMF are balanced. The shunt is then introduced so as to
the reading within reasonable limit The magnet is
be placed at least 50 feet from the Galv and the Galv
10 feet from the bridge The Key is to have a
spring closing point, A standard magnet is to be
made

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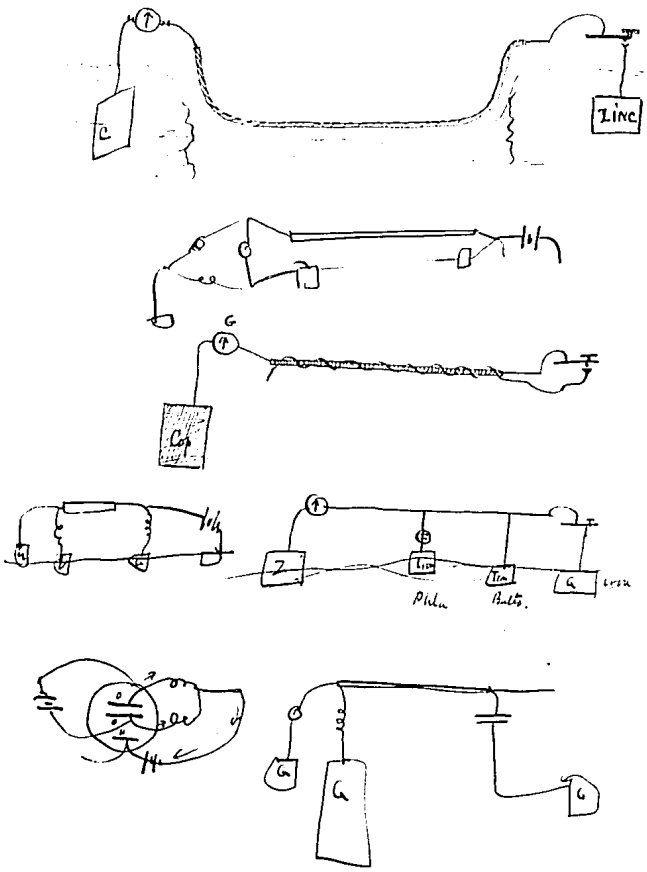

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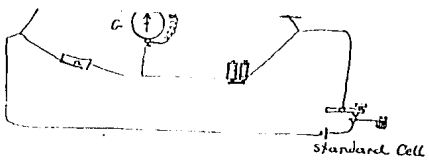

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s a mirror-Galvanometer. The current being connected permanently
EMF are balanced. The shunt is then introduced so as to
t the reading within reasonable limit. The magnet is
-ter placed at least 50 feet from the Galv and the Galv
10 feet from the bridge. The Key is to have a

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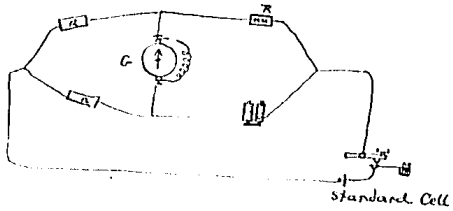

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(3)

a mirror Galvanometer. The current being connected permanently
EMF are balanced. The shunt is then introduced so as to
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to be placed at least 50 feet from the Galv and the Galv
10 feet from the bridge. The Key is to have a
spring closing point, a standard magnet is to be
made

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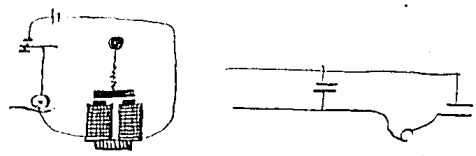

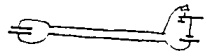

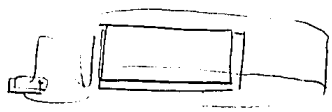

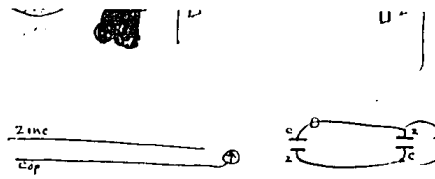

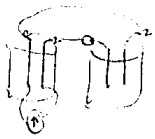

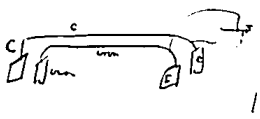

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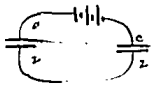

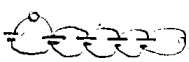

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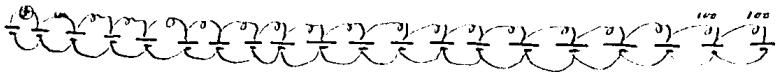

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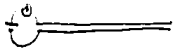

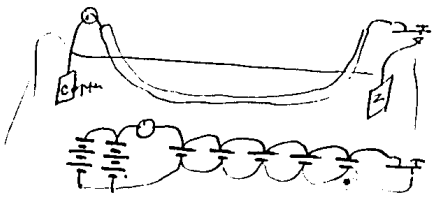

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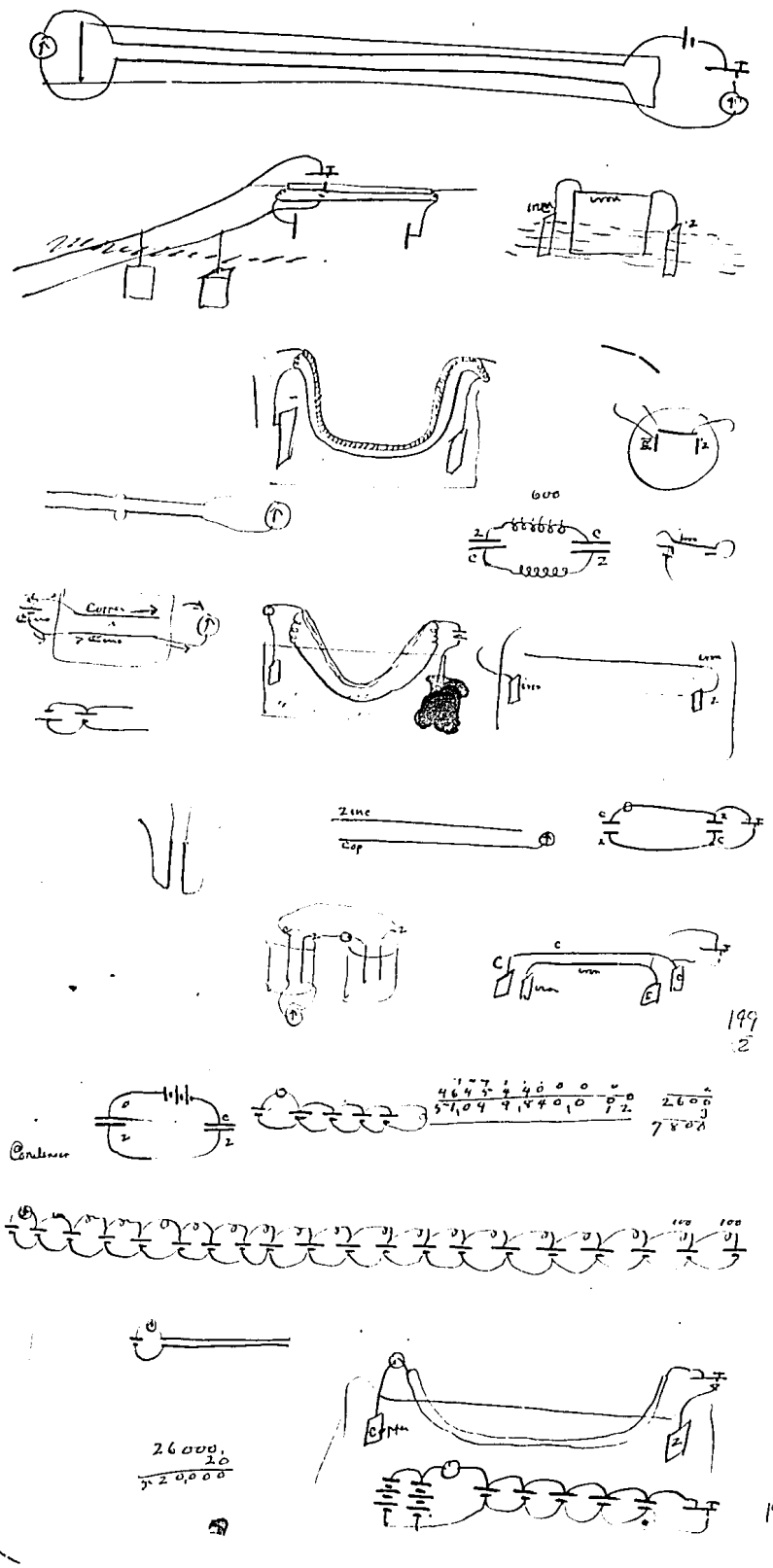

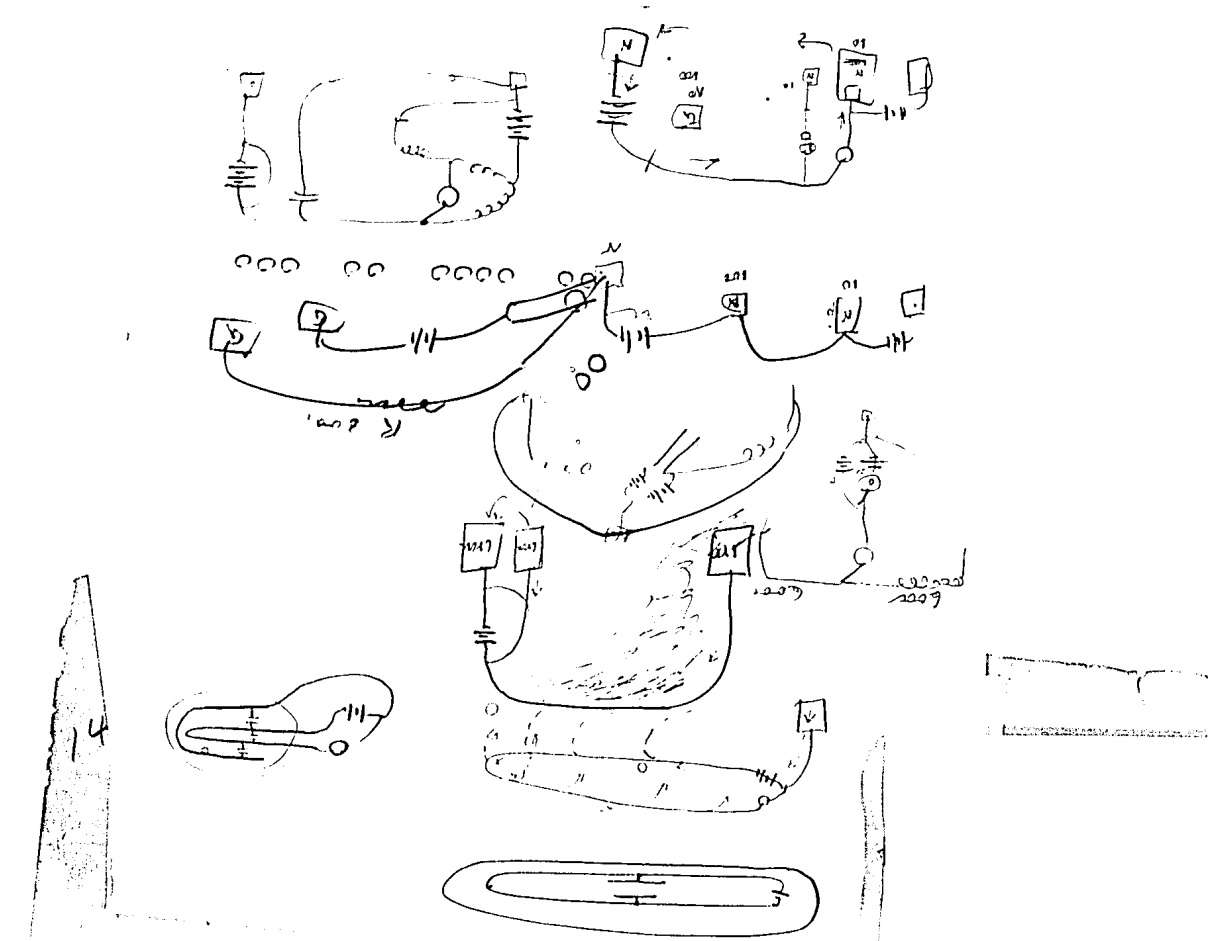

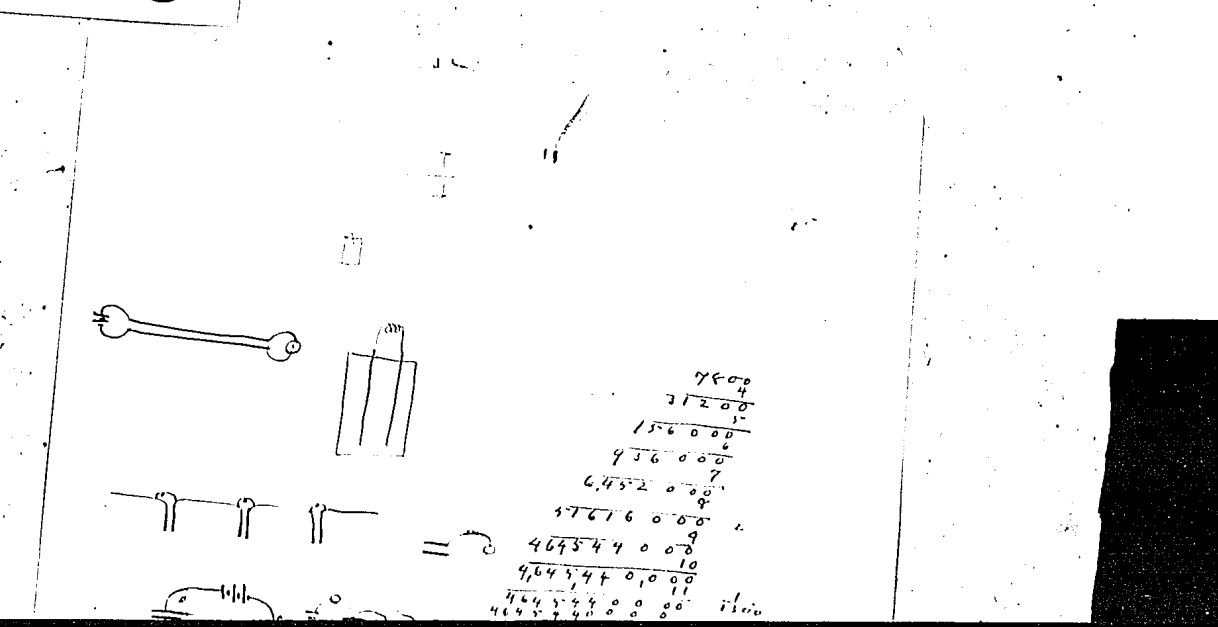

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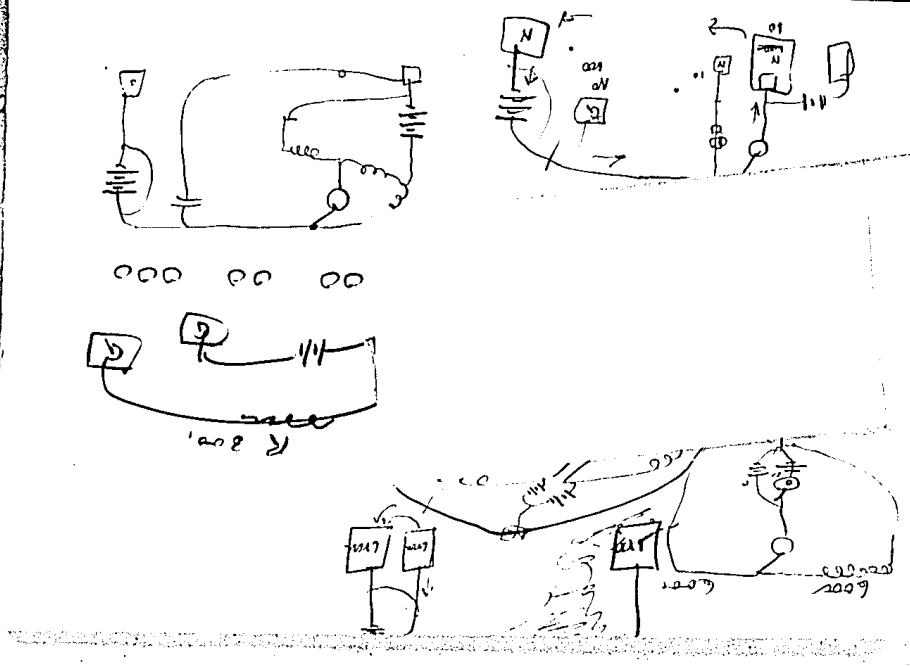

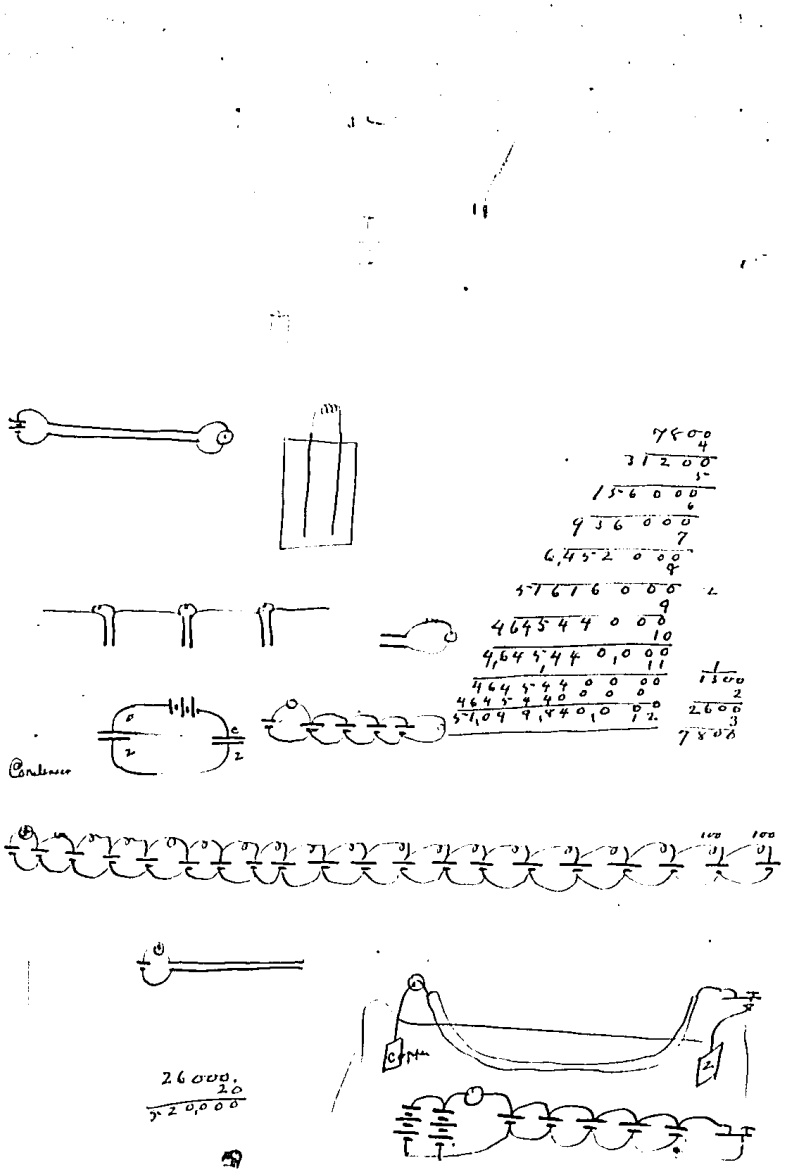

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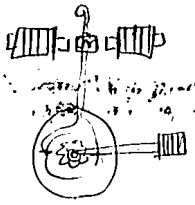

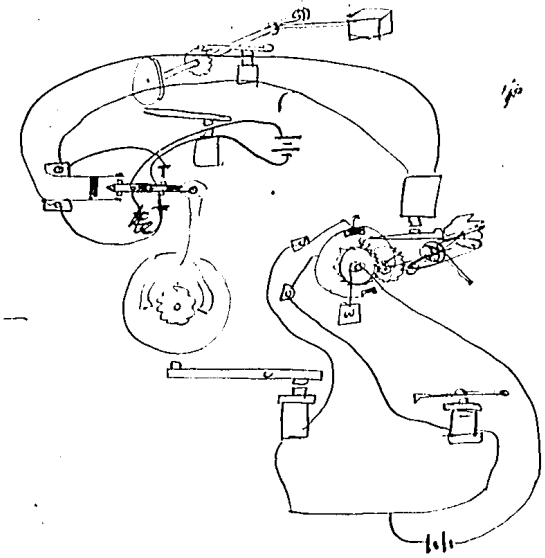

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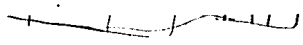

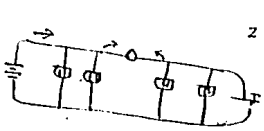

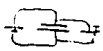

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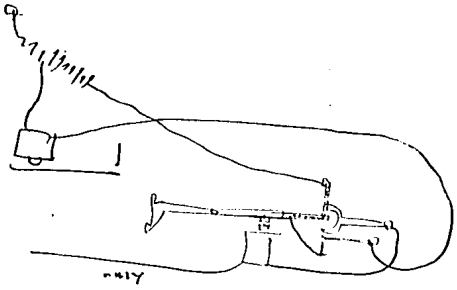

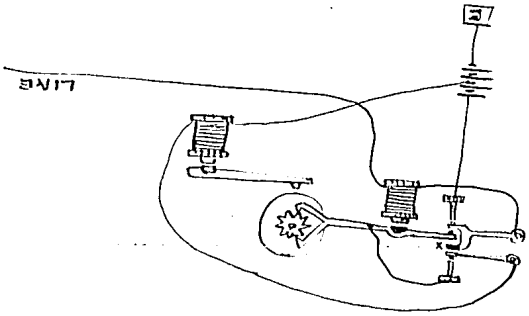

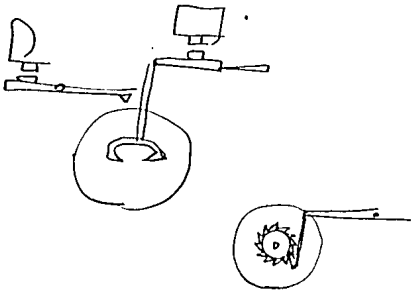

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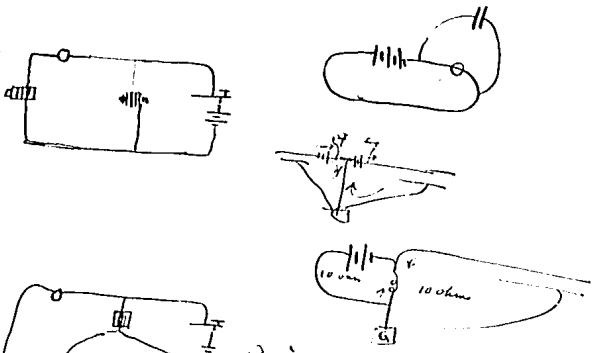

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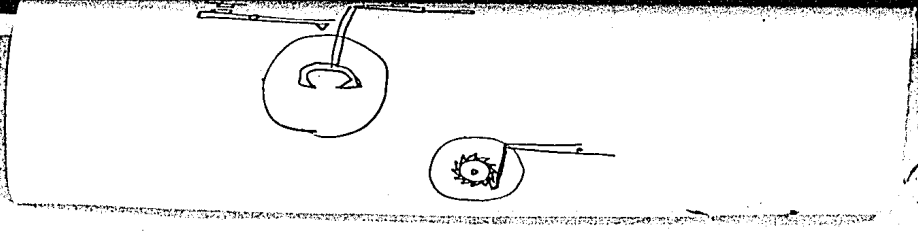

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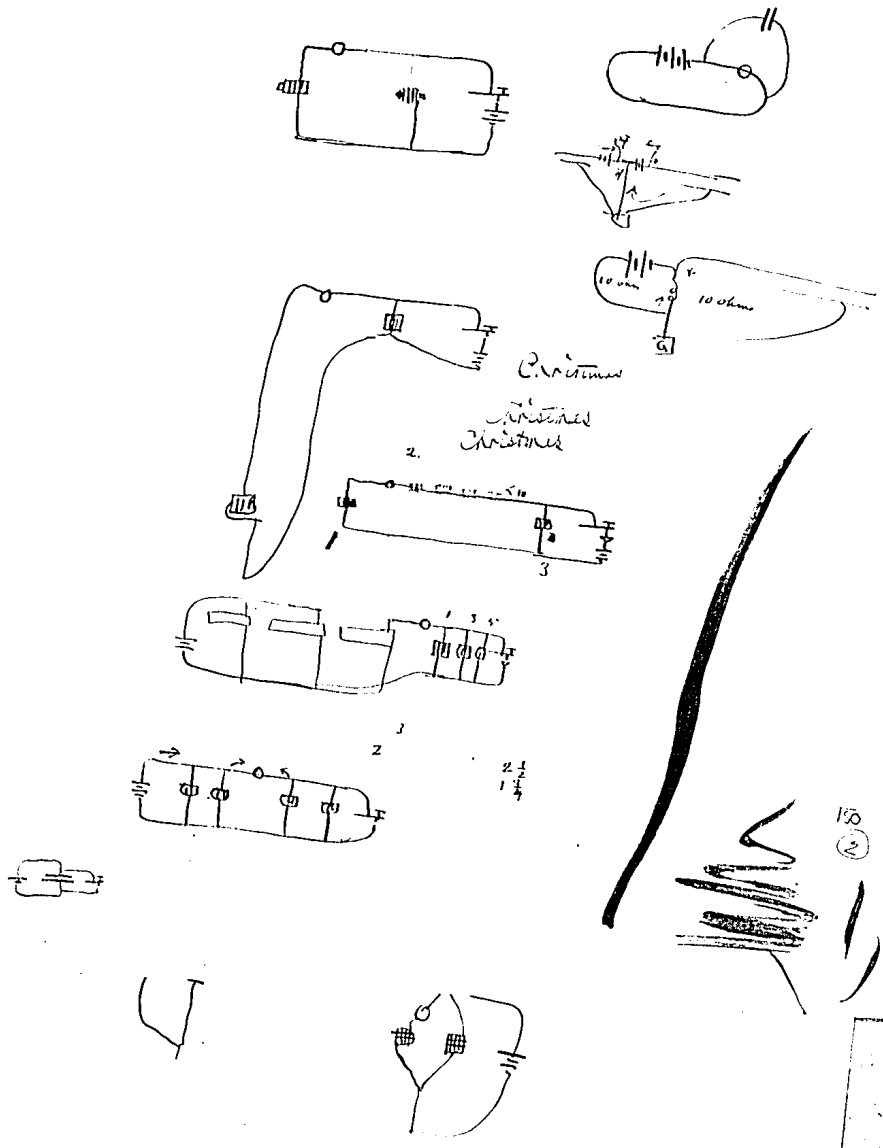

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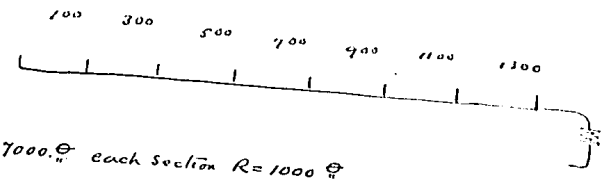

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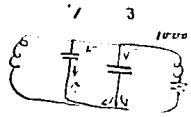

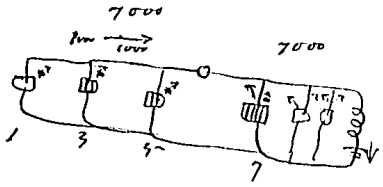

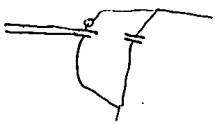

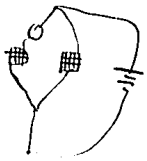

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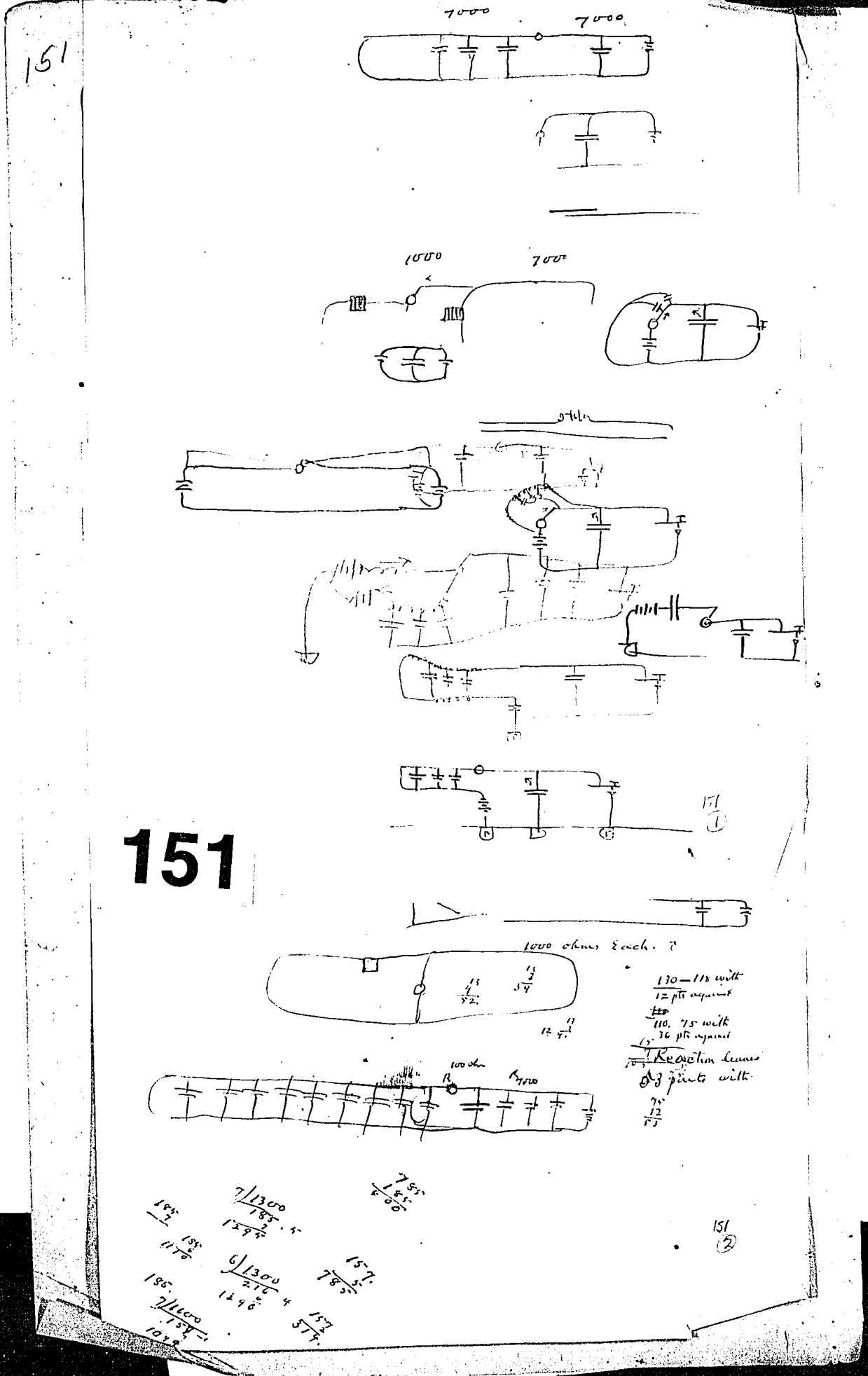

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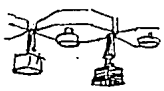

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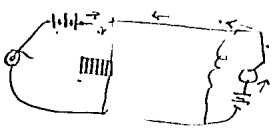

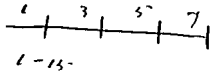

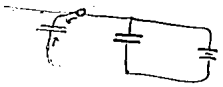

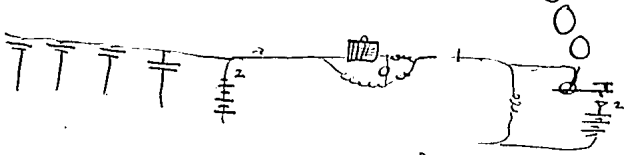

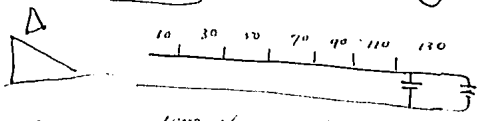

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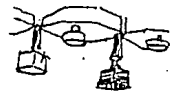

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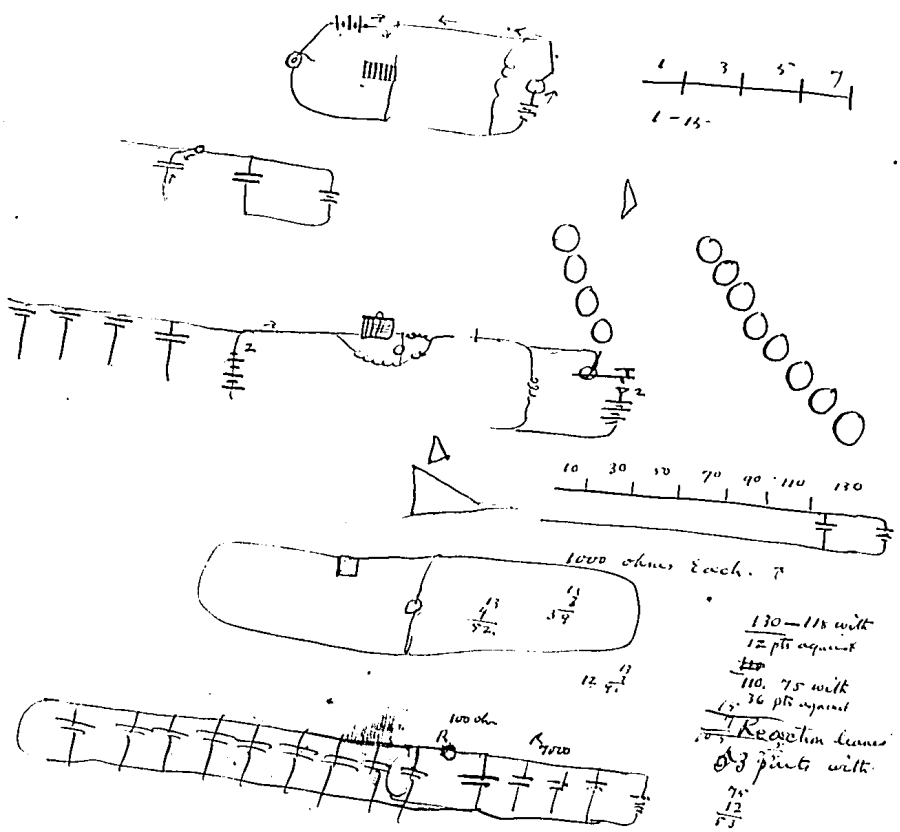
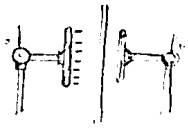
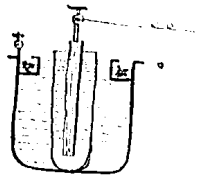
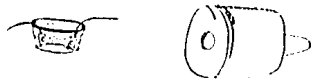


152

Definition of physics.— as we look around on the universe on which we dwell, we are struck with a variety of objects outside of ourselves and independent of us, Some of these we see, some we touch, others we hear, or taste or smell







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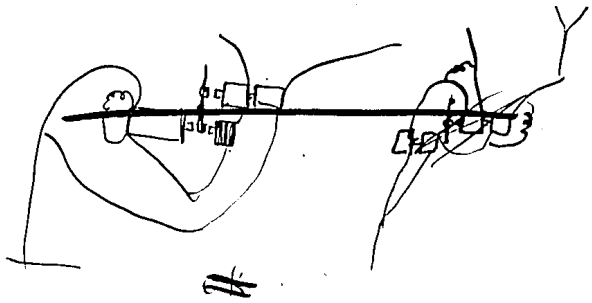

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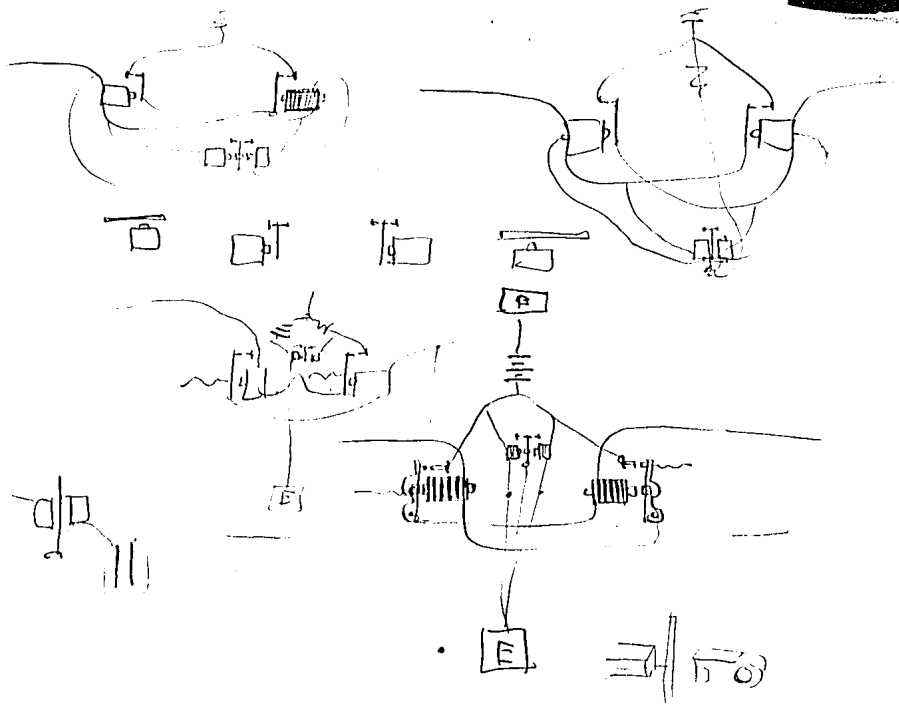

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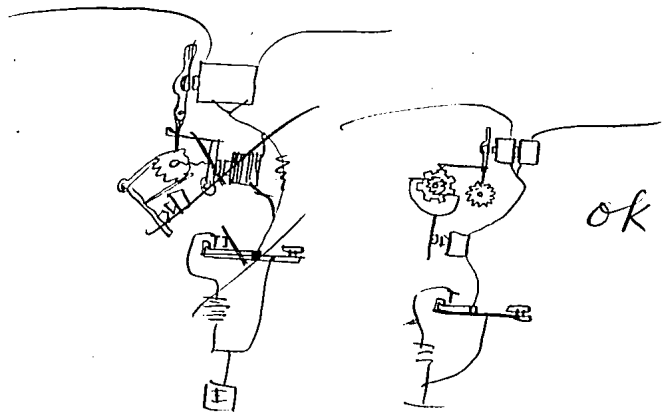

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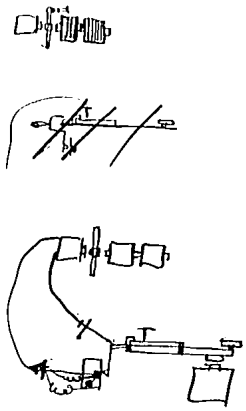

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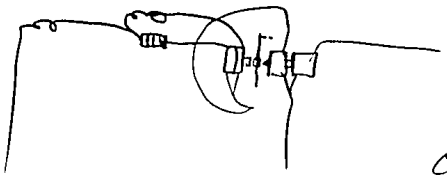

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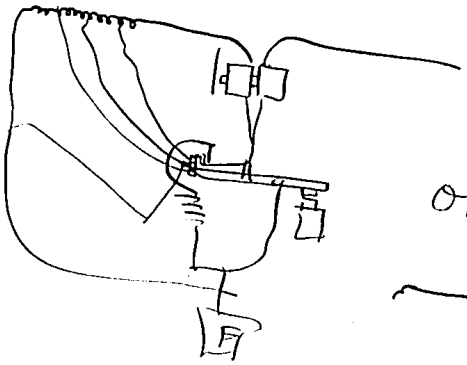

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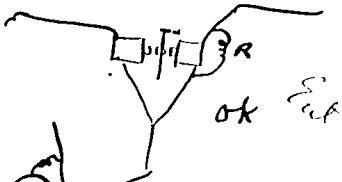

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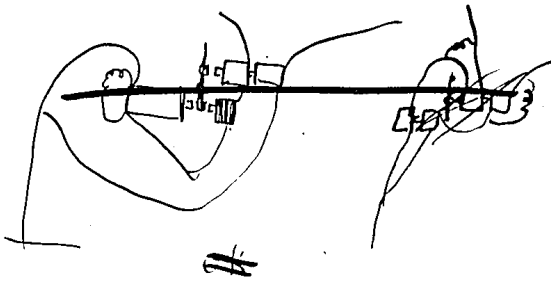

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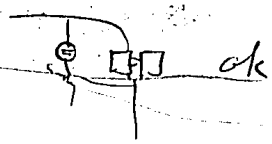
153



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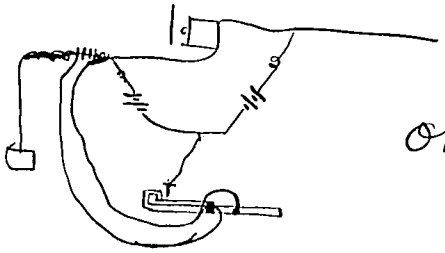

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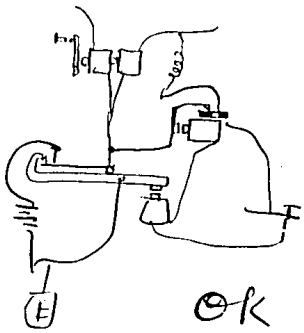

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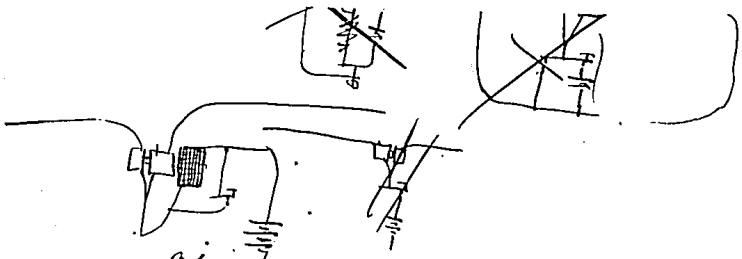
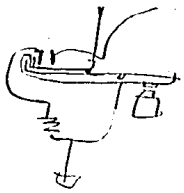
153 ①



153 ②

Ok

Look again



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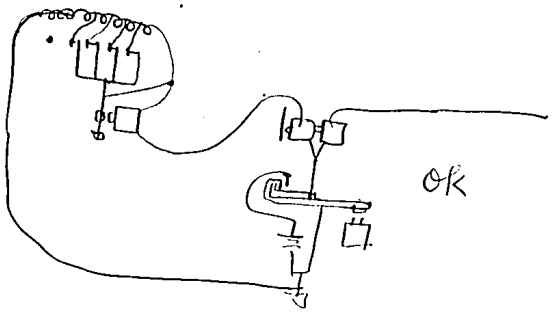

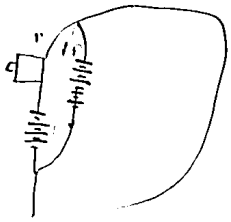

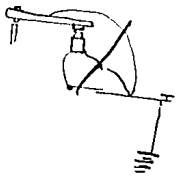

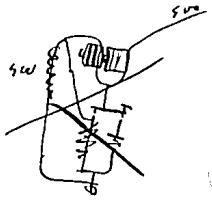

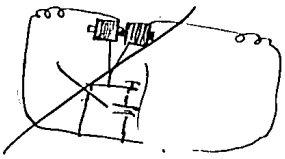

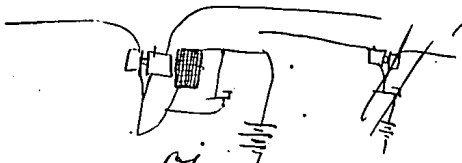

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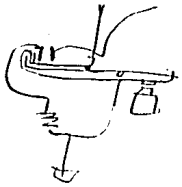

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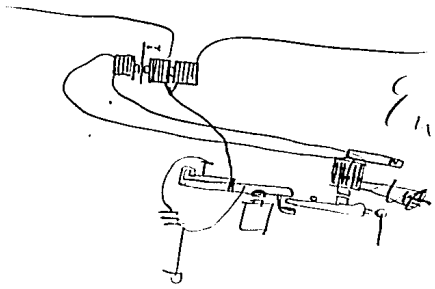

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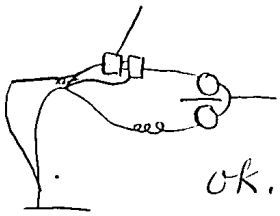

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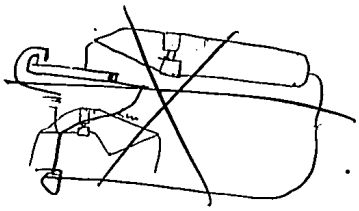

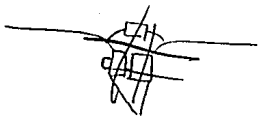

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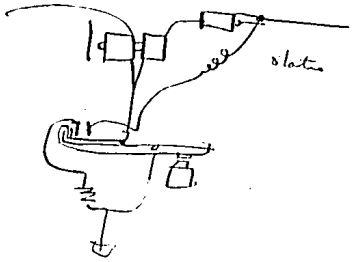

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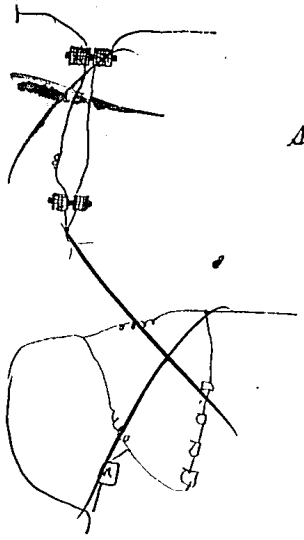
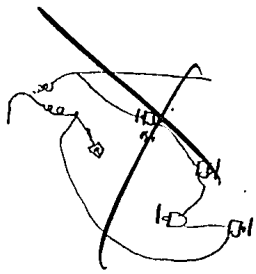
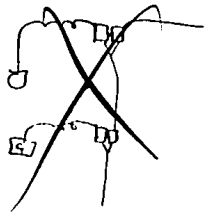
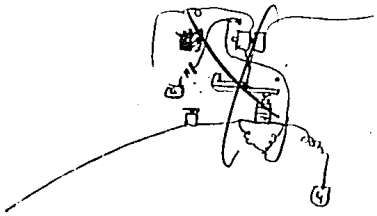


Suggest about Farmer.
" attorney Phelps Powell







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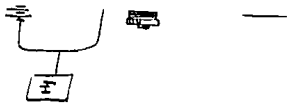

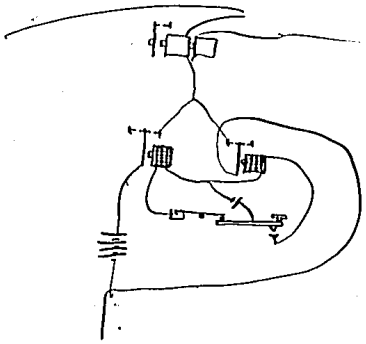

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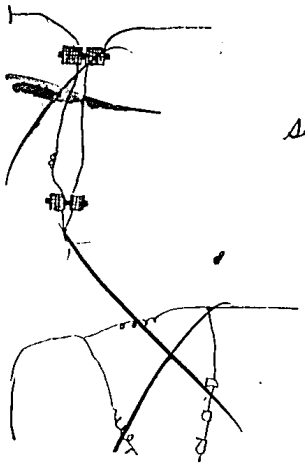

Suggest about Farmer.

" attorney Phelps Prevelin

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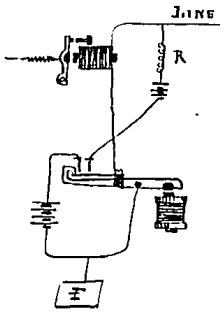

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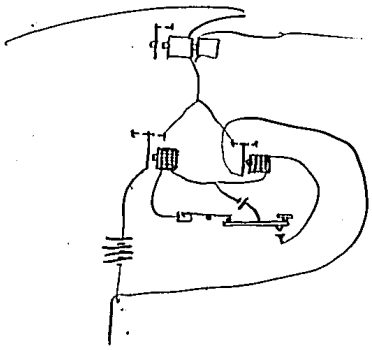

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310

Newark Feb 10th 1874

Perforator

April 31st 1871 Paid Brumm [illegible] for cutting letters on Key Tuesday June [illegible] 1871 [illegible] Springs Tempered in N.Y. city Monday July 17th 1871 Paid Chas. Roff 5.00 Express on Perforator to 66 Broadway N.Y. City

Thursday July 20th cleaned Room out fixed Switch Board Friday July 21st 1871 Carpet put down and office opened ready for work by us,

T A Edison
Wm Unger
B. F. Murray

To G Harrington Esq

Sworn before me Justice of Peace

310①

J. [illegible] WASHINGTON, President.

AUTOMATIC TELEGRAPH CO.

TRENTON, N. J. AND WASHINGTON, D. C.

NEW YORK, 66 Broadway. PHILADELPHIA, 310 Chestnut St. Baltimore and South St

From Philada Received at 66 B'WAY

To T. A. Edison Newark

Nov 11 1874

The National academy of Sciences Professor Henry President is now in session at the University of Penna in this city Will you come on either Tuesday or Thursday and exhibit your remarkable Electric ~~Mot~~ Motorgraph to them = Letter by mail

Geo T. Barker
66 Franklin Publick Journal
Penna

ans b'ble sent to Univer Penna

310②

See Letter page 132.

E-1719

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